



राजपत्र, हिमाचल प्रदेश

(असाधारण)

हिमाचल प्रदेश राज्यशासन द्वारा प्रकाशित

शिमला, शनिवार, १६ फरवरी, १९६६/३० मार्च, १९८७

GOVERNMENT OF HIMACHAL PRADESH

INDUSTRIES DEPARTMENT

NOTIFICATION

Simla-4, the 8th September, 1965

No. I&S. 15(Metric)473/58-III.—In exercise of the powers conferred by sub-section (1) of section 42 of the Rajasthan Weights and Measures (Enforcement) Act, 1958 as extended to the Union territory of Himachal Pradesh, the Administrator (Lieutenant Governor), Himachal Pradesh, is pleased to make the following amendments in the Himachal Pradesh Weights and Measures (Enforcement) Rules, 1958:—

AMENDMENTS TO HIMACHAL PRADESH WEIGHTS AND MEASURES (ENFORCEMENT) RULES, 1958

I. AMENDMENTS TO RULES

1. Proviso to sub-rule (4) of rule 5 shall be deleted.
2. Rules 6 and 7 shall be deleted.

3. In sub-rule (1) of rule 8 the words "Working standards" at the end shall be substituted by "Working standard weights".

4. At the end of sub-rule (1) of rule 10 the words "and Schedule VII" shall be added.

5. At the end of sub-rule (2) of rule 10 the words "and Schedule VII" shall be added.

6. Proviso (b) to sub-rule (3) of rule 10, shall be substituted as follows:—

"(b) Where the capacity of any such instrument in-terms of any weight or measure other than those of a standard mass or measure does not exactly correspond to any capacity of such instrument in terms of a standard mass or measure as specified in Schedule VI and Schedule VII, the limits of error and sensitiveness which may be tolerated shall be determined taking into account the limits of error and sensitiveness of the next higher and the next lower capacities, and assuming the limits to be proportionate to capacity."

7. The following new sub-rule (4) shall be added after sub-rule (3) in rule 10:

"(4) Every person using a beam scale in transactions for trade or commerce in his premises shall suspend the same to a stand or to a chain by a hook:

Provided that this rule shall not apply to hawkers and persons selling goods in periodical bazars:

Provided further that if the Lieutenant Governor, is satisfied that the requirements of this sub-rule cannot be immediately complied with by any other class of persons, he may, by notification in the Official Gazette exempt such class of persons from the provisions of this sub-rule for such period as may be specified in such notification."

8. Rule 11 shall be substituted by the following:—

"11. *Commercial Weights etc., to be verified periodically.*—(1) All measuring instruments used or intended to be used in transactions for trade or commerce, and all weights, measures and weighing instruments used or intended to be used in transactions for trade or commerce in bullion or precious stones or by a factory as defined in the Factories Act, 1948, shall be verified and stamped in accordance with the Act and these rules at least once in a period of twelve months.

(2) All other weights, measures and weighing instruments used or intended to be used in transactions for trade or commerce shall be verified and stamped in accordance with the Act and these rules at least once in a period of 24 months.

(3) Notwithstanding anything contained in sub-rule (1) or sub-rule (2), any weighing or measuring instrument which has been verified and stamped *in situ* shall, if it is removed and re-erected before the expiry of the period referred to in that sub-rule, be verified and stamped in accordance with the Act and these rules on such removal or re-erection."

9. The following new rule shall be added after rule 11:—

"11A. Notwithstanding anything contained in rule 11, any weight, measure or weighing or measuring instrument which has been once verified and stamped in accordance with the rules then in

force may, where the Lieutenant Governor, has by notification in the Official Gazette specified a period in this behalf, within that period, be re-verified and stamped in accordance with the rules which were in force at the time of the first verification and stamping:

Provided that the period so specified shall in no case exceed ten years and may be different for different classes of weights, measures or weighing or measuring instruments”.

10. The following new sub-rule (5) shall be added after sub-rule (4) in rule 12:

“(5) Provision relating to the weighment done for trade and commerce by vehicle/cart loads—

(a) Vehicle or cart weighed on a weighbridge shall not be unloaded within a radius of 10 metres from the place where the weighbridge is fixed:

Provided that the State Government may allow exemption in respect of certain class of trade or trade premises from operation of this rule and the Superintendent may reduce the distance for any trade premises for the purpose of this rule.

(b) No weighment shall be done on a weighbridge after sunset or before sunrise, unless adequate arrangement of lighting is made.

(c) The gross or tare weights of commodities in vehicle-load or cart-load shall immediately be recorded by the trader or his agent and a signed record of weighment shall be handed over to the person concerned after each weighment is completed and before the vehicle or cart is removed from the weighbridge.

(d) A trader shall provide such number of standard weights not exceeding one-fourth of the capacity of the machine as may be required by the Inspector for the purpose of verification, re-verification and inspection of weighing instruments of capacities of above five hundred kg.

(e) To ensure a proper check of the accuracy of weighbridges and platform machines, a trader shall keep at each weighbridge one tonne of standard weights or standard weights equal to one-half of the capacity of the machine whichever is less along with a set of small standard weights of such denominations as may be directed by the Superintendent:

Provided that the Superintendent may fix the total number of standard weights not exceeding one tonne to be maintained in trade premises where the number of weighing machines is more than one.

(f) A trader or his agent shall notify to the Superintendent and Inspector the site of all weighbridges or platform machines and the names of persons using or operating such weighbridges or platform machines at least a month before the commencement of their use or operation and get them verified and stamped well in advance of their use.

(g) No weighbridge or platform machine after it has been so verified and stamped by an Inspector, shall be removed or dismantled from its original site without the prior approval of the Superintendent or Assistant Superintendent.

(h) A trader or his agent shall cause to be prepared a list of persons using or operating a weighbridge or platform machine

owned by him and shall display such list prominently and conspicuously at the site of use or operation of such weighing-bridge of platform machine."

11. For "Schedule VII" in sub-rule (4) of rule 12, "Schedule VIII" shall be substituted.

12. In sub-rule (5) of rule 13, for "Schedule VIII", "Schedule IX" shall be substituted.

13. The following new rule shall be added after rule 13:—

"13A. *Sealed packages, containers etc.*—The limits of error which may be tolerated in the weight or measure of an article sold or offered for sale in sealed packages or containers shall be as specified in Schedule X."

14. (1) In rule 15, for "Schedule IX", "Schedule XI" shall be substituted.

(2) In rule 15, for "Schedules V & VI", "Schedules V, VI & VII" shall be substituted.

15. In sub-rule (2) of rule 18, the words and figure 'subject to a minimum of Rs. 5.00' shall be added after the word 'equipment'.

16. The existing sub-rule (3) of rule 21 shall be substituted by the following-sub rule:—

"(3) All payments received by the Inspector during the preceding week shall be paid into the Government treasury during the week or the following Monday creditable to Receipt Head 'XXIX—Industries—A-Industries Receipts under Weights and Measures (Enforcement) Act, 1958 (H.P.)' A receipt will be obtained and intimation to that effect sent to the Superintendent of Weights & Measures."

17. (1) In clause (i) of sub-rule (1) of rule 22 for the words "Weights and Measures, beam scales, spring balances, counter machines, and steel-yards" the words "Weights, measures and weighing and measuring instruments" shall be substituted.

(2) Clause (ii) of sub-rule (1) of rule 22 shall be deleted and instead a new clause (ii) shall be added as follows:

"(ii) Any article or package or container shall be liable to be seized and detained, if—

(a) the marking of net weight or measure of the article, package or container is false;

(b) it does not bear the label as required by the Act and these rules; or

(c) the label is transferred or forged.

(3) In sub-rule (2) of rule 22, for the words "one month" the words "sixty days" shall be substituted.

(4) In sub-rule (2) of rule 22, the words "or any article or package or container" shall be inserted between the words "measuring instrument" and "seized".

(5) In sub-rule (3) of rule 22, the words "or any article, package or container" shall be inserted between the words "measuring instrument" and "seized".

18. *Rule 24 (Duties of Inspectors)*—

The following new clause (g) shall be added after clause (f) in rule 24:—

"(g) Such other duties under the Act and the rules as the Superintendent may by special or general order specify."

19. In sub-rule (3) of rule 25 the following words shall be inserted

between the words "eight pointed star design" and words "for" "as shown in the illustration below."



20. Rule 27 (*Licensing of manufacturers, repairers and dealers of weights, measures etc.*).—

(1) At the end of sub-rule (1) of rule 27 the following shall be added:—

"The period of license shall be a calendar year."

(2) At the end of sub-rule (2) of rule 27 the following proviso shall be added:

"Provided that after 15 days of the expiry of the licence, in addition to the fee chargeable as aforesaid, an extra fee at rates equal to half the rates prescribed in the said schedule shall be charged if renewed within 30 days of the date of expiry. The license will be treated as cancelled in case it is not renewed within 30 days of the date of expiry."

The fee payable for duplicate copy of such license shall be equal to 10% of the fees specified in Schedule XIV."

(3) For "Schedule XI" occurring in rule 27 (1), "Schedule XII" occurring in rule 27 (2) and "Schedule XIII", occurring in rule 27 (4); "Schedule XIII", "Schedule XIV" and "Schedule XV" shall respectively be substituted.

II. AMENDMENTS TO SCHEDULES

SCHEDULE I

PART 1—SECONDARY/STANDARD WEIGHTS

1. In clause (b) under the head "Material" the words and figures "75 per cent copper and 25 per cent Nickel" shall be substituted by the following:—

"Copper 79 to 81 per cent,
Nickel 19 to 21 per cent,
total impurities not to exceed 1.5 per cent."

2. In clause (c) under the head "Material" the following sentence namely,—

"Copper, silicon and iron contained as impurities in commercially pure aluminium shall not exceed 0.3 per cent" shall be added at the end.

3. In clause (a) under the head "Shape" the following sentence, namely:

"Weights of 10 kg to 100 kg (inclusive) shall have adjusting devices
Lead shall not be used as an adjusting material" shall be added at the end.

4. The following new clause (c) shall be added after clause (b) under the head "Shape":—

(c) "The denominations shall be marked on the weights".

PART 2—SECONDARY STANDARD CAPACITY MEASURES.

5. Under the head "Denominations" the figure "10" shall be deleted from the millilitre series.

6. Under the head "Permissible Errors" the figure "10 ml" and all entries against it shall be deleted.

7. After Part 2, a new Part 3 shall be added as follows:

"PART 3—SECONDARY STANDARD LENGTH MEASURES

- (1) *Material*.—58 per cent nickel-steel.
- (2) *Section*.—Rectangular cross-section with dimensions 30mm × 15mm. The top surface shall have two rectangular grooves, along its length.
- (3) *Overall Length*.—1030 mm.
- (4) *Graduated Length*.—1010 mm.
- (5) *Finish*.—Bright, highly polished.
- (6) *Graduations*.—Graduated in mm throughout.
- (7) *Thickness of Graduation Marks*.—Not less than 30 microns and not more than 50 microns.
- (8) *Tolerance*.—(i) The maximum permissible errors in the graduations shall be (i) ± 25 microns between any 2 adjacent millimetre marks, provided that the error between any two consecutive centimetre marks shall also not exceed ± 25 microns.
(ii) ± 50 microns between any two marks more than 10 cm apart."

SCHEDULE II

PART 1—WORKING STANDARD WEIGHTS

1. The bracket and the words within it (*viz.* For Cast Iron and Non-Bullion Weights) shall be deleted.
2. In clause (a) under the head "Material", the composition of eupro-nickel shall be substituted as follows:—
"Copper 79 to 81 per cent,
Nickel 19 to 21 per cent,
total impurities not to exceed 1.5 per cent."
3. In clause (c) under the head "Material" the following sentence shall be added at the end:—
"Copper, silicon and iron contained as impurities in commercially pure aluminium shall not exceed 0.3 per cent."
4. After clause (e) under the head "Shape" the following new clause (f) shall be added:—
"(f) The denominations shall be marked on the weights."

PART 2—WORKING STANDARD CAPACITY MEASURES

5. Under the head "Denominations", the figure "20" and the figure "10" shall be deleted from the litre and millilitre series respectively.
6. Under the head "Permissible Errors" the figure "10 ml" and all entries against it, shall be deleted.

SCHEDULE III

1. Schedule "III" shall be deleted.

SCHEDULE V

PART I—COMMERCIAL WEIGHTS (OTHER THAN CARAT WEIGHTS)

1. In clause (a), under the head "Denomination", the figure and letter "50 g" shall be added after "100 g".
2. Clause (a) of para 2 shall be substituted as follows:—
"Iron and Steel weights.—(a) *Materials*.—Weights of 50 kg and down to and including 5 kg shall be made only of cast iron. Weight

of 2 kg and down to and including 50g shall either be made of cast iron or forged mild steel."

3. The following denomination and dimensions shall be added at the end in table 2:—

50g 26 28 22 13 3 16 14 3 4 2.

4. In clause (d) of para 2, the figure and letter "100g" shall be replaced by "50 g".

5. In clause (f) of para 2 under denomination, verification and inspection columns, the following shall be added at the end:—

50g

200

100

6. In clause (a) of para 3 the following words shall be deleted:

"The cast brass and brass rods may preferably conform to Grade 3 of IS: 292-1951 and to IS: 319-1951, respectively. Cast bronze may preferably conform to Grade 2 of IS: 306-1951."

7. In clause (b)(1)(i) of para 3, the last sentence beginning with the word "Weights" and ending with the word "diamond" shall be substituted as follows:—

"Weights of 20 kg down to and including 200g shall be marked with the words 'Bullion' and 'within a diamond' as shown in Fig. 3 and 4 and weights of 100g down to and including 1g shall be marked with only a 'diamond'."

8. In Table 4 of clause (b)(1)(i) of para 3, the figure "29" against denomination "500g" shall be substituted by the figure "39".

9. Clause (a) of para 4 shall be substituted to read as under:

"(a) *Materials*.—Sheet Metal Weights shall be made of stainless steel, aluminium brass or nickel silver sheets."

10. In para 6, the word "मिली" shall be replaced by the word "मिग्रा".

11. In para 6, the words within brackets shall be substituted as follows:

"Letters need not be stamped on weights 50mg and below and on bullion weights with knobs of denominations 5g and below."

12. In clause 7, the following sentence shall be deleted:—

"The lead used for adjusting may preferably conform to Grade Pb. 99.8 per cent of IS: 27-1956."

PART II—COMMERCIAL CARAT WEIGHTS

The whole of this part shall be substituted as follows:

"PART II—COMMERCIAL CARAT WEIGHTS

1. *General*.—(a) This part prescribes the requirements for commercial metric carat weights intended for use in weighing pearls, diamonds and other precious stones.

(b) For easy calculation and convenience in use, a carat is sub-divided into 100 parts called cents. Thus, a cent equals 2 mg. Fractions of a carat are expressed with 100 as the denominator, the numerator representing the number of cents in the fractions; for example, 0.5 carat is designated as 50/100 carat.

2. *Denominations.*—(a) The denominations of the carat weights shall be as given below:—

(i) *Knob Weights*
Denominations

Carat
(c)
500
200
100
50
20
10
5

(ii) *Sheet Metal Weights*
Denomination

Carat
(c)
2
1
50/100
20/100
10/100
5/100
2/100
1/100
0.5/100

There shall be two weights each of the denominations 2, 20 or 200 and 2/100, 20/100 carats.

3. *Knob weights.*—(a) *Materials.*—The weights shall be made from rolled, drawn or extruded material and shall not be cast.

The weights shall be made from brass, bronze, nickel-silver, non-magnetic nickel-chromium or non-magnetic stainless steel.

TABLE 1—NOMINAL DIMENSIONS OF KNOB CARAT WEIGHTS
(All dimensions in mm)

| Denomination (Carat) | A | B | C | D | E | F | G | H | K | |
|-------------------------|----|----|-----|------|-----|-----|-----|------|-------|------|
| 500 | .. | 12 | 2.5 | 1.25 | 5.0 | 1.5 | 8.0 | 33.2 | 13.26 | 0.40 |
| 200 | .. | 10 | 2.2 | 1.10 | 4.5 | 1.5 | 6.5 | 24.4 | 9.60 | 0.30 |
| 100 | .. | 9 | 2.0 | 1.00 | 4.0 | 1.0 | 6.0 | 19.1 | 7.63 | 0.30 |
| 50 | .. | 8 | 1.8 | 0.90 | 3.5 | 1.0 | 5.5 | 15.0 | 5.95 | 0.25 |
| 20 | .. | 7 | 1.7 | 0.85 | 3.0 | 1.0 | 5.0 | 10.8 | 4.13 | 0.25 |
| 10 | .. | 6 | 1.6 | 0.80 | 2.5 | 1.0 | 4.5 | 8.2 | 3.26 | 0.20 |
| 5 | .. | 5 | 1.5 | 0.75 | 2.0 | 1.0 | 4.0 | 6.3 | 2.49 | 0.20 |

Note.—The above nominal dimensions are related to a material with a density of 8.4g/cm³. To take into account variations in materials and manufacturing practices, a tolerance of ± 5 per cent is permitted on the dimensions except on C, E and K.

(b) *Shape and Dimensions.*—The shape and dimensions of the weights shall be as shown in Fig. 1 and Table 1.

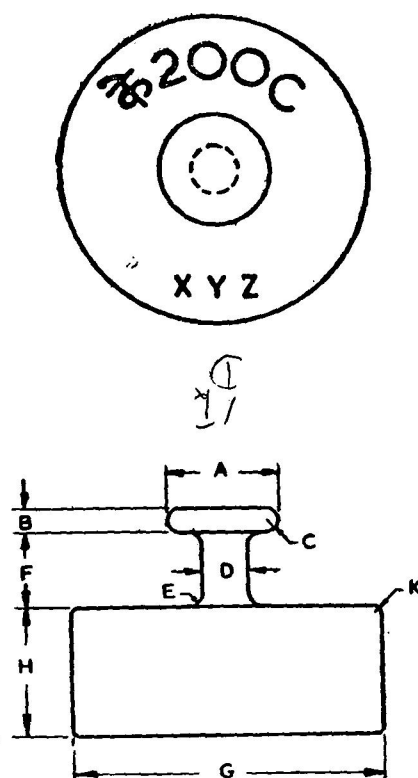


Fig. 1—Knob Carat Weight

(c) *Permissible Errors:*

| Denomination | Verification | | Inspection | |
|--------------|-----------------------|-----|--------------------------|------------|
| | Errors in excess only | | Excess | Deficiency |
| Carat (c) | .. | mg | mg | mg |
| 500 | .. | 8.0 | Same as on verification. | 4.0 |
| 200 | .. | 6.0 | | 3.0 |
| 100 | .. | 5.0 | | 2.5 |
| 50 | .. | 4.0 | | 2.0 |
| 20 | .. | 3.0 | | 1.5 |
| 10 | .. | 2.0 | | 1.0 |
| 5 | .. | 1.0 | | 0.5 |

4. *Sheet Metal Weights.*—(a) *Materials.*—Weights of denominations 2/100 carat and below shall be made of aluminium sheet. Weights of higher denominations shall be made of sheets of brass, aluminium, nickel-silver, nickel chromium or bronze.

(b) *Shape and Dimensions.*—Sheet metal weights shall be square with

a raised corner for easy handling (See Fig. 2). They shall have the dimensions given in Table 2.

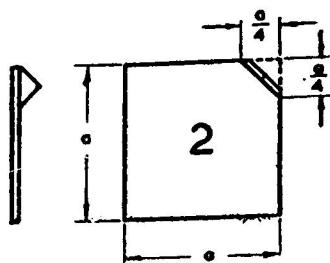


Fig. 2—Sheet Metal Carat Weights

TABLE 2—NOMINAL DIMENSIONS OF SHEET METAL CARAT WEIGHTS

| Denomination Carat (c) | Size (a) mm |
|------------------------------|----------------|
| 2 | 12 |
| 1 | 10 |
| 50/100 | 9 |
| 20/100 | 8 |
| 10/100 | 7 |
| 5/100 | 6 |
| 2/100 | 5 |
| 1/100 | 4 |
| 0.5/100 | 3 |
| Tolerance | ±10 per cent. |

(c) Permissible Errors:

| Denomination | | Verification | Inspection | |
|--------------|----|-----------------------|--------------------------|------------|
| | | Errors in excess only | Excess | Deficiency |
| Carat (c) | | mg | mg | mg |
| 2 | .. | 0.8 | | 0.4 |
| 1 | .. | 0.6 | | 0.3 |
| 50/100 | .. | 0.4 | | 0.2 |
| 20/100 | .. | 0.2 | Same as on verification. | 0.1 |
| 10/100 | .. | 0.2 | | 0.1 |
| 5/100 | .. | 0.1 | | 0.05 |
| 2/100 | .. | 0.1 | | 0.05 |
| 1/100 | .. | 0.1 | | 0.05 |
| 0.5/100 | .. | 0.1 | | 0.05 |

5. *Manufacture and finish.*—(a) The surface of the weights shall be reasonably smooth. Sheet metal weights shall be smoothly sheared and shall be free from burrs.

(b) For better stability and finish, the weights may be nickel-chromium gold or rhodium-plated.

6. *Marking.*—(a) Every weight, except weights of 50 carat and lower-denominations, shall have the manufacturer's name or trade mark and the denomination indelibly stamped on it.

(i) The denomination shall be marked in the Indo-Arabic numerals prefixed and suffixed by the letters 'के' and 'c' respectively, except that in the case of weights below 50 carat, only the numerals shall be marked. The size of the numerals and letters indicating denominations of weights shall be at least double the size of letters indicating the manufacturer's name or trade mark.

(b) The marking shall be legible and deep enough to ensure indelibility over a long period of use, but not so deep as to crack the weight itself."

PART III—COMMERCIAL LIQUID CAPACITY MEASURES

1. In para 1, the following sentence shall be deleted:—

"Cylindrical measures are generally used for measuring out commodities like milk while conical measures are generally used for mineral oils."

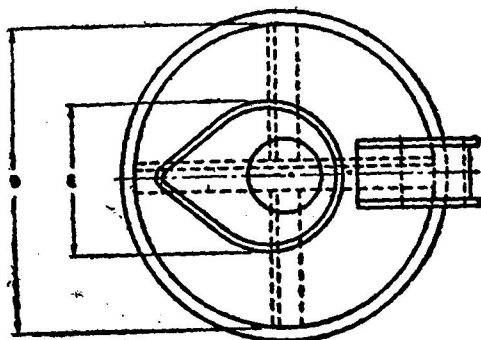
Table 11 under clause (a) of para 3 and table 12 under clause (b) of para 3, shall respectively be replaced by the following:—

"TABLE 11—NOMINAL DIMENSIONS OF CYLINDRICAL CAPACITY MEASURES

| Denominations | D | H | B. max. | B. min. | G. min. |
|---------------|------|-----|---------|---------|---------|
| 2 litres | 120 | 180 | 360 | 250 | 1.60 |
| 1 litre | 95 | 142 | 254 | 210 | 1.60 |
| 500 ml | 75 | 114 | 224 | 160 | 1.60 |
| 200 ml | 55.5 | 83 | 166 | 120 | 1.25 |
| 100 ml | 44 | 66 | 132 | 100 | 1.25 |
| 50 ml | 35 | 52 | 104 | 80 | 1.25 |
| 20 ml | 26 | 38 | 76 | 60 | 1.00 |

Note I.—All dimensions in millimetres.

Note II.—Tolerance on dimensions ± 10 per cent.



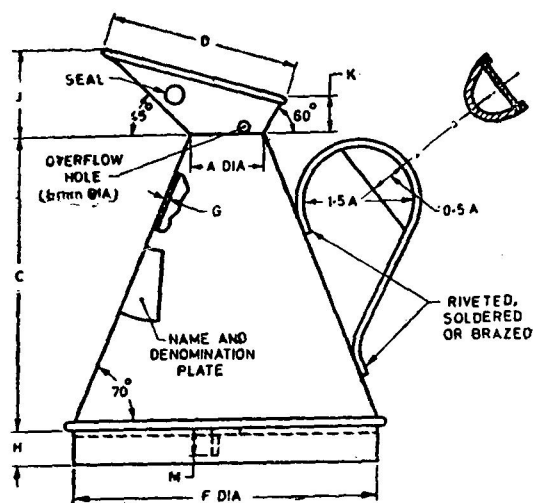


Fig. 2—Pouring Type Conical Measure (Schematic)

TABLE 12—NOMINAL DIMENSIONS OF CONICAL CAPACITY MEASURES

| Denomination | | A | B | C | D | E | F | G. min | H | J | K | M |
|--------------|----|----|-----|-----|------|-----|-----|--------|----|------|----|----|
| 20 litres | .. | 97 | 388 | 388 | 208 | 194 | 390 | 1.00 | 35 | 86 | 29 | 30 |
| 10 litres | .. | 77 | 308 | 307 | 174 | 154 | 309 | 1.00 | 30 | 75 | 26 | 25 |
| 5 litres | .. | 61 | 244 | 245 | 147 | 122 | 247 | 0.800 | 25 | 65.5 | 24 | 20 |
| 2 litres | .. | 45 | 180 | 180 | 118 | 90 | 182 | 0.800 | 20 | 56 | 22 | 16 |
| 1 litre | .. | 36 | 143 | 143 | 95.5 | 72 | 145 | 0.630 | 20 | 45 | 18 | 16 |
| 500 ml | .. | 28 | 114 | 113 | 74 | 56 | 115 | 0.630 | 15 | 35.5 | 14 | 12 |
| 200 ml | .. | 21 | 84 | 84 | 53 | 42 | 86 | 0.630 | 10 | 24.5 | 10 | 8 |
| 100 ml | .. | 17 | 66 | 67 | 41 | 34 | 69 | 0.630 | 10 | 18.5 | 7 | 8 |

Note 1.—All dimensions in millimetres.

Note 2.—Tolerance on dimensions ± 10 per cent except in case of 10 litre and 20 litre measures for which the tolerance shall be ± 5 per cent."

- In clause (a) of para 4 the following sentence shall be deleted:—
"The aluminium alloy sheets and brass sheets preferably conform to NS 3 of IS: 737-1955 and Grade 4 of IS: 410-1953, respectively."
- In clause (b) of para 4 the following sentence shall be deleted:—
"The galvanised steel sheets, aluminium alloy sheets, brass sheets and tin-plate may preferably conform to Class I of IS: 277-1951, NS 3 of IS: 737-1955, Grade 4 of IS: 410-1953 and Grade I (CI) of IS: 597-1953, respectively."
- Clause (a) of para 5 shall be substituted by the following:—
"Cylindrical measures made of brass sheets and copper sheets shall be well tinned or tinplated uniformly all over the inside as well as the outside surfaces. Conical measures made of brass sheets or copper sheets shall be well tinned or tinplated uniformly all over the inside when they are used for measuring commodities like milk, edible oils and such other food articles."
- At the end of para 5, the following Notes shall be added:—

Note I.—Capacity measures when used for measuring milk shall have the handle fixed by welding, soldering or brazing so as not to leave pockets in which dirt may accumulate.

Note II.—Dipping type cylindrical measures may also have handles substituted by two suitable but diagonally opposite brackets affixed to the walls of the measure by means of soldering, brazing or welding so as to hold the measure properly by a handle at right angles to the walls of the measure to facilitate its use in hot and boiled milk trade."

6. In clause (b) of para 7, the word 'मिलि' occurring for the first time shall be replaced by 'मिली' and 'मिलि' occurring for the second time shall be replaced by 'मिली'.

7. Fig. Nos. 11A, 11B, and 12 as amended shall be renumbered as Fig. Nos. 1A, 1B and 2 and Tables 11 and 12 as Tables 1 and 2 respectively, wherever references are to these figures and Tables.

After Part III the following new part to be renumbered as Part IV shall be added as follows and the existing Part IV shall be renumbered as Part V:—

"PART IV—SPECIAL MEASURES FOR PETROLEUM PRODUCTS

1. *General.*—This part deals with a special capacity measure which may be used for petroleum products, in addition to the conical measures prescribed in Part III of this Schedule. This measure shall not be used for any other commodity.

2. *Denomination.*—The special measure shall have a capacity of 18.5 litres.

3. *Shape and Dimensions.*—The shape and dimensions of the special measure shall be as indicated in figure 1.

4. *Materials.*—The measure shall be fabricated from galvanised steel sheets, aluminium alloy sheets, copper sheets, brass sheets, stainless steel sheets or tin-plate. The minimum thickness of the sheet shall be as indicated in figure 1. The handle shall be fabricated from the same material as that used for the body.

5. *Permissible Error.*—The maximum permissible error for verification as well as for inspection shall be as follows:

| | | |
|---------------|-------------|--------|
| Verification: | Excess only | 100 ml |
| Inspection: | Excess | 100 ml |
| | Deficiency | 50 ml |

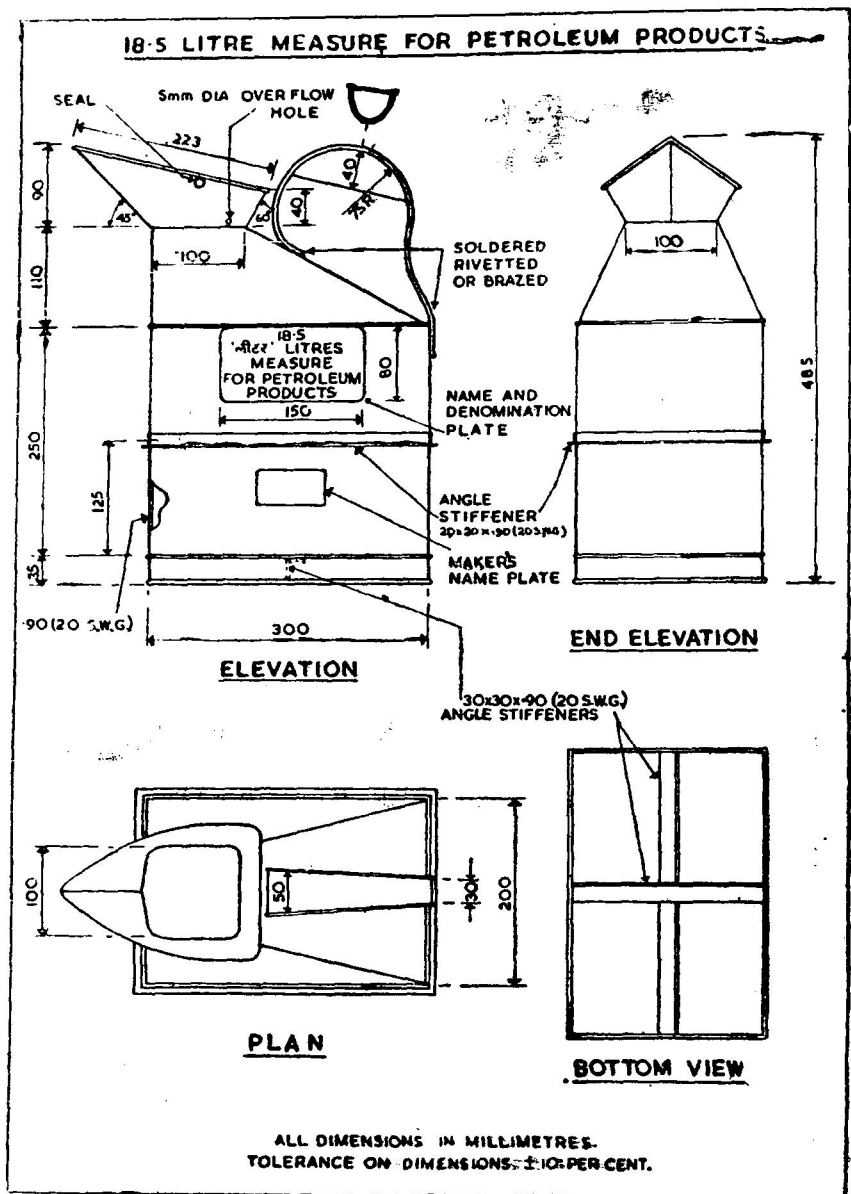


Fig. 1—18.5 Litre Measure for Petroleum Products

PART V—(AS RENUMBERED) DISPENSING MEASURES

1. In para 1 of this part 'General' the following words shall be added at the end:

'Conical dispensing measures of capacity 100 ml may also be used in the sale of liquor.'

2. Fig. Nos. 13A to 13G shall be renumbered as figure Nos. 1A to 1G wherever references are made to these figures.

3. Fig. 14A and 14B shall be renumbered as Fig. 2A and 2B, and Tables 13, 14 and 15 as Tables 1, 2 and 3 respectively, wherever references are made to these figures and Tables.

4. In para 7, Marking, the word 'मिलि' shall be replaced by the word 'मिली'.

After Part V (as re-numbered) a new part to be numbered as Part VI, shall be added as follows and the existing Part V shall be re-numbered as Part VII:—

"PART VI—SPECIAL MEASURES FOR LIQUOR

1. *General*.—This part deals with special measures which may be used in transactions in liquor.

2. *Beaker Measures*.—(a) *Material*.—The measure shall be made of glass.

(b) *Denomination and Graduation*.—It shall be of the denomination of 300 ml. It shall have graduation marks at 100 ml, 120 ml, 150 ml, 180 ml, 200 ml, 250 ml, and 300 ml.

(c) *Permissible Errors*.—The permissible errors shall be as follows:—

| Graduation marks | Maximum permissible error |
|---|---------------------------|
| 100 ml, 120 ml | ± 2 ml |
| 150 ml, 180 ml, 200 ml, 250 ml, 300 ml | ± 3 ml |

3. *Peg Measures*.—(a) Peg measures may be of the denominations 60 ml and 30 ml.

(b) *Permissible Errors*.—The permissible errors shall be as follows:—

| Capacity | Maximum permissible error |
|----------|---------------------------|
| 60 ml | ± 2 ml |
| 30 ml | ± 1 ml |

PART VII—(AS RENUMBERED) COMMERCIAL LENGTH MEASURES

1. In para 1, the following sentence shall be deleted:—

'Metallic measures are usually used for measuring textiles, ribbons and similar materials and wooden measures generally in the timber trade.'

2. In para 2, the denominations 1m and 0.5m shall be added under 'Wooden Measures'.

3. In para 3(a), the following sentence shall be deleted:—

'The mild steel rods and brass bars may preferably conform to Designation B of IS: 226-1955 and Grade A of IS: 319-1951 respectively.'

4. In para 3(c)(i) for the first sentence the following shall be substituted:—
'The graduation marks shall be made at every centimetre, or at every centimetre for the first ten centimetres and thereafter at every five centimetres.'

5. In para 4(c) for the first sentence the following shall be substituted:—
'The graduation marks shall be made at every centimetre or at every centimetre for the first ten centimetres and thereafter at every five centimetres.'

6. In para 4(d) the following shall be added in the tables:

| Denomination | Verification | | Inspection | |
|--------------|--------------|------------|------------|------------|
| | Excess | Deficiency | Excess | Deficiency |
| 1 m | 2 | 1 | 2 | 2 |
| 0.5 m | 1 | 0.5 | 1 | 1 |

7. Fig. Nos. 15 and 16 shall be renumbered as Fig. Nos. 1 and 2 respectively, wherever references are made to these figure numbers."

After Part VII (as renumbered) four new parts to be numbered as Part VIII, Part IX, Part X and Part XI shall be added as follows:—

"PART VIII—COMMERCIAL FOLDING SCALES

1. *General*.—This part deals with wooden folding scales.

2. *Denominations*.—The denominations of folding scale shall be:
1m and 0.5m.

3. *Materials*.—(a) The scales shall be made from strips or sheets of wood. They shall be uniform in width and thickness throughout the entire length.

(b) The scales shall be made of any one of the following species of timbers:

(i) Boxwood (*Buxus sempervirens*).

(ii) Gardenia (*Gardenia* sp.).

(iii) Parrotia (*Parrotia Jacquemontiana*)/*Randia Dumetorum*.

(iv) Dudhi (*Wrightia* sp.).

(v) Bamboo.

(vi) Haldu (*Adina cordifolia* Hook. f.).

(vii) Kalam (*Mitragyna parvifolia*-Korth).

(viii) Kuthan (*Hymenodictyon excelsum* Wall).

(ix) Gamari (*Gmelina arborea* Linn).

(c) The timber shall be thoroughly seasoned and radially sawn. The moisture content of the timber shall be between 8 and 12 per cent. The timber shall be free from knots, cracks, sap wood, shakes and other visible defects such as decay, insect attack, etc., and shall be fairly straight-grained.

4. *Manufacture*.—(a) *General*.—The scales shall be straight and flat, the edges parallel to each other and the ends square.

(b) No point on any of the edges shall be more than 0.5mm distant from the straight line connecting its extremities. No point on the surface of a scale shall be more than 0.5mm distant from the plane of the surface.

(c) The scales shall consist of four pieces hinged together and it shall be an end measuring scale. The joints shall work smoothly without undue play and shall be sufficiently free from the folds to be opened and closed without strain. The brass caps shall be closely fitted and strongly secured to the blades. They shall be made flush with the sides of the scales.

5. *Dimensions*.—(a) The principal dimensions of the scale blanks shall be as follows:—

| Length of graduated part (m) | Overall length | | Width | | Thickness (mm) | |
|------------------------------|----------------|-----------|-----------|-----------|----------------|-----|
| | Max. (mm) | Min. (mm) | Max. (mm) | Min. (mm) | | |
| 0.5 | 500 | — | 15.0 | 14.5 | 4 | ± 1 |
| 1 | 1000 | — | 20.0 | 19.0 | 5 | ± 1 |

6. *Graduations*.—(a) Graduation marks shall be made at every millimetre with a longer line at every 5mm and centimetre. The length of the graduation lines shall be as follows:—

cm marks 6mm

5mm mark 4mm

1mm mark 2.5mm.

(b) The lines shall be fine and clear, of uniform depth and thickness, and perpendicular to the edges. The thickness of lines shall be not more than 0.2mm for stamped scales and 0.1mm for engine divided scales. The lines shall be of sufficient depth to be legible and indelible.

(c) The lines shall be filled in black on natural background or with a suitable colour which shall contrast with the colour of the base to ensure legibility.

(d) Every centimetre shall be numbered in Indo-Arabic numerals. The height of the figures shall be between 2.0 and 2.5mm.

7. *Permissible Error*.—The cumulative error for the entire graduated part shall not exceed ± 0.50 mm. Further, over any 10 cm length of scale, the error shall not exceed ± 0.25 mm.

8. *Marking*.—(a) The denomination shall be stamped on the un-graduated side of the measure at a distance about one-third of the total length from the beginning of the measure. The manufacturer's name or trade mark shall be marked at the same distance from the end of the measure. The marking shall be finished in the same manner as the graduations.

(b) The denomination shall be given in Indo-Arabic numerals preceded by the word 'मीटर' and succeeded by the word 'metre'. The size of numerals and letters, indicating denominations of the measures shall be twice that of the letters indicating the manufacturer's name or trade mark.

9. *Provision for stamping*.—The measure shall receive the Inspector's stamp either on the metal strip at the ends or the central hinge as may be convenient.

PART IX—WOVEN METALLIC TAPE MEASURES

1. Woven metallic tape measures may be used where the use of rigid measures is not convenient or practicable.

2. *Denominations*.—The tape measures shall be made in lengths of 2, 5, 10, 15, 20, 30 or 50 metres.

3. *Tape*.—(a) *Materials*.—(i) The tape shall be of yarn and metal wire in the warp and only yarn in the weft.

(ii) The yarn shall be spun from good quality cotton or linen and shall be either bleached or mercerized. The yarn used shall be of 20 count (17 French count) in the warp and 40 count (34 French count) in the weft.

(iii) The wire shall be of phosphor bronze, copper or stainless steel and shall be 0.16 mm in diameter.

(b) *Weave*.—(i) The weave shall be either plain, that is one up and one down, or *dosuti* that is two up and two down with at least eight wires uniformly spaced in the warp.

(ii) The total number of warp threads, including wire threads, shall be in the full width of the tape. The picks per centimetre shall be 16 in the case of cotton yarn and 13 in the case of linen yarn.

4. *Manufacture*.—(a) The tape shall be coated with a suitable primer of synthetic material over which one or more coats of a flexible, high quality enamel shall be given. The final top coat shall be of a varnish which shall give the tape a good finish. All coatings shall be non-cracking and water resistant.

(b) A metal ring shall be attached to the outer end of tapes of denominations 10, 15, 20, 30 and 50 metres, the ring being fastened to the tape by a

metal strip of the same width as the tape for protection and for receiving the Inspectors stamp (See Fig. 1).

(c) (i) The outer end of tapes of denominations 10, 15, 20, 30 and 50 metres shall be reinforced over a length of not less than 10 cm by a strip of leather or suitable plastic material of the same width as the tape. The leather or plastic strip shall also pass around the ring and under the metal strip (See Fig. 1).

(ii) Tapes of 2 and 5 metre denominations shall be reinforced over a length of not less than 10 cm by a strip of cotton fabric or suitable plastic material, over which a strip of brass or any other suitable material is rigidly fixed for protection and for receiving the Inspector's stamp (See Fig. 2).

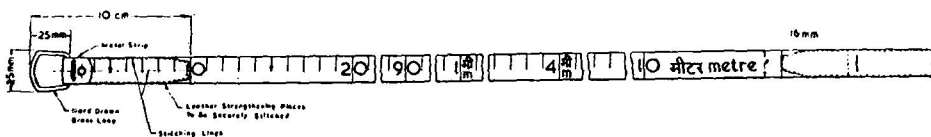


Fig. 1—Woven Metallic Tape Measures—10, 15, 20, 30 and 50 metres

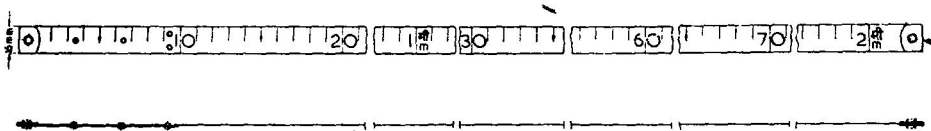


Fig. 2—Woven Metallic Tape Measures—2 and 5 metres.

5. *Graduation.*—(a) The length of the tape shall include the metal finger ring, when provided.

(b) At every centimetre a black line, 8 to 10 mm in height shall be drawn and every five centimetres shall be marked with an arrow in black. Every 10th cm and every metre shall be marked with a black line extending over the full width of the tape (i.e. 16 mm). The graduation marks at every 10th cm and every metre shall be numbered with black and red figures, respectively. The metre markings shall in addition, contain the letters 'मी' and 'm' and the end of the tape shall be marked 'मीटर' and 'metre'. The graduations shall be only on one side of the tapes.

(c) *Permissible Errors.*—The errors in the length of the tape when supported on a horizontal surface, under a tension of one kilogram, shall not exceed the following both during verification and inspection:

| Denomination | Permissible errors |
|--------------|--------------------|
| m | mm |
| 2 | + 1.5 |
| 5 | + 3.0 |
| 10 | + 5.0 |
| 15 | + 7.5 |
| 20 | + 10.0 |
| 30 | + 15.0 |
| 50 | + 20.0 |

In addition, in the case of 20, 30 and 50 metre tapes, the errors from the beginning of the tape to the lengths specified below shall not exceed the

following limits:—

| <i>Length</i> | <i>Permissible errors</i> |
|---------------|---------------------------|
| m | mm |
| 10 | ± 10 |
| 15 | ± 12.5 |
| 20 | ± 15 |
| 30 | ± 20 |

6. *Marking*.—On the un-graduated side and also on the case of each tape when provided, the name of the manufacturer or his registered trade mark and the denomination shall be legibly marked in English or Devnagri or in both.

7. *Provision for Stamping*.—Measures shall be stamped on the metal strip at the beginning of the scale on the graduated side.

PART X—METRIC STEEL TAPE MEASURES (WINDING TYPE)

1. *Denominations*.—The denominations of the tape measures shall be 1, 2, 10, 15, 20, 30 and 50 metres.

2. *Tape*.—(a) Tapes shall be of steel or stainless steel and may be of the following dimensions:—

| <i>Width</i> | <i>Tolerance</i> | <i>Corresponding thickness</i> | <i>Tolerance</i> |
|------------------------------------|------------------|--------------------------------------|------------------|
| mm | mm | mm | mm |
| 16.0 } 13.0 } 9.5 } 6.0 } | ± 0.05 | 0.40 } 0.40 } 0.40 } 0.15 } | ± 0.05 |

(b) The tape shall be of such a quality that when it is wound once round a rod of the diameter indicated below and then released, there shall be no permanent deformation in the tape:

| <i>Thickness of Tape</i> | <i>Diameter of Rod</i> |
|--------------------------|------------------------|
| mm | mm |
| 0.15 | 12 |
| 0.40 | 25 |

(c) The tapes of widths 16.0, 13.0 and 9.5 mm shall be curved or flat. Tapes of 6.0 mm width shall be flat.

(d) The edges of the tapes shall be slightly rounded. The tapes shall be well polished or provided with a rust-proof coating and shall be free from burrs.

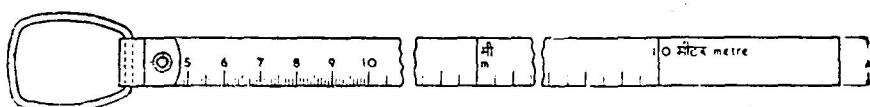
(e) The outer end of the tapes shall be provided with a ring or other device for facilitating withdrawal. The ring or other device shall be fastened to the tape by a metal strip of the same width as the tape.

3. *Graduations*.—(a) The length of the tape shall include the metal finger ring, when provided.

(b) The tape shall be graduated at intervals of 1 mm along the first 10 cm of its length and at intervals of 5 mm over the remaining part. The height of the graduation marks shall be as follows:

| Unit | Minimum height of marking mm |
|------------------|---------------------------------|
| Millimetre | 2 |
| Five millimetres | 3 |
| Centimetre | 4 |
| Metre | Full width of the tape. |

(c) Every 10 cm and metre shall be marked with Indo-Arabic numerals in bold type. The metre divisions shall, in addition, bear the designation 'मी' and 'm'. Every centimetre in the first 10th centimetre shall also be marked with Indo-Arabic numerals. The end of tape measures of denominations 10, 15, 20, 30 and 50 metres shall be marked with the words 'मीटर' and 'metre'. (See Fig. 1).



A = 16.0, 13.0, 9.5 OR 6.0 mm

Fig. 1—Metric Steel Tape Measures (Winding Type) 10, 15, 20, 30 and 50 metres.

4. *Permissible Errors.*—(a) When checked against a working standard, the error in the length of the tape, supported on a horizontal surface with a tension of 2 kg in the case of 1 and 2 metre lengths and 5 kg in the case of 10, 15, 20, 30 and 50 metre lengths, shall not exceed the following limits:—

(i) The error between any two adjacent millimetre lines or between consecutive centimetre lines shall not exceed ± 0.2 mm. The error between consecutive 10th cm lines or consecutive metre lines shall not exceed ± 0.4 mm, and

(ii) When measured from zero to the points specified below, the error in the length of the tape shall not exceed the following limits:—

- | | | | |
|--|----|-------|--|
| (i) 1 metre mark | .. | \pm | 0.4 mm |
| (ii) 2 metre mark | .. | \pm | 0.6 mm |
| (iii) 5 metre mark | .. | \pm | 1.0 mm |
| (iv) Any metre mark beyond the first 5 metres. | | \pm | (1.0 mm for the first 5 metres ± 0.5 mm for additional 5 metres or part thereof). |

(b) The permissible errors are the same for verification or inspection.

5. *Marking.*—On the un-graduated side and on the case of each tape, the name or trade mark of the manufacturer and the denomination shall be legibly marked in English or Devnagri or in both, in addition, the direction of winding shall also be legibly marked on the case.

6. *Provision for stamping.*—Measures shall be stamped near the beginning of the scale on the graduated side.

PART XI—SURVEYING CHAINS

1. *General.*—This part prescribes the requirements for ink type surveying chains of 20 and 30 m lengths for land measurements.

2. *Definitions.*—(a) *Surveying Chain.*—An instrument for measuring the surface distance between two points.

(b) *Length of Chain.*—The distance between the outside surfaces of the handles when fully stretched.

(c) *Tallies.*—Metallic tags or indicators of distinctive pattern fixed at various points of the chain, to facilitate quick reading of fractions of a chain.

3. *Material.*—The different components of the chain shall be made from the materials mentioned against each:—

Component

Material

| | |
|------------------|--|
| Handle | Brass Castings |
| Eye Bolt Collar | Brass suitable for free cutting and high speed machine work. |
| Ring | Galvanized Mild Steel Wire 4.00 mm. |
| Link, Small | |
| Link, Large | |
| Link, Connecting | |
| Tally | Brass Sheet or Galvanised Sheets. Brass Wire. |
| Indicating Ring | |

4. *Constructional details.*—(a) The nomenclature of the different parts of the chain and their dimensions shall be as indicated in Fig. 1, 2 and 3.

(b) Tallies shall be fixed at every fifth metre along the chain. Small rings shall be fixed at every metre, except where tallies are attached. The tallies shall have distinctive shapes depending on their position in the chain as shown in Fig. 1 and 2.

(c) Connecting links between two large links shall be oval in shape, the central one being a circular ring.

(d) To facilitate holding the arrows (chain pins) in position with the handle of the chain, a groove shall be cut on the outside surface of the handle as shown in Fig. 3. The radius of the groove shall correspond to the radius of the arrows.

(e) The handle joint shall have flexibility in order that it may be possible to swivel the handle round the eye bolt. A swivel may also be provided at the middle of the chain.

5. *Permissible Errors.*—(a) When measured with a tension of 8 kg every metre length shall be accurate with an error not exceeding ± 2 mm. The overall length of the chains shall be accurate within the following limits of error:—

| | |
|-----------------|-------------|
| 20 metre chains | ± 5 mm. |
| 30 metre chains | ± 8 mm. |

(b) The permissible errors shall be the same for verification and inspection.

6. *Marking.*—(a) The tallies used for marking the distance in a chain shall be marked with letter 'मी' and 'm' (See Fig. 3).

(b) The length of the chain, 20 m or 30 m, as the case may be, shall be indelibly marked over the handle (See Fig. 3) to indicate the length.

(c) The chains shall be indelibly marked, on the reverse side of the surface of the handle having the denominations, with the manufacturer's name, or trade mark.

7. *Provision for stamping.*—A metal label or disc shall be permanently attached to the handle at the beginning of each chain for the Inspector's stamp.

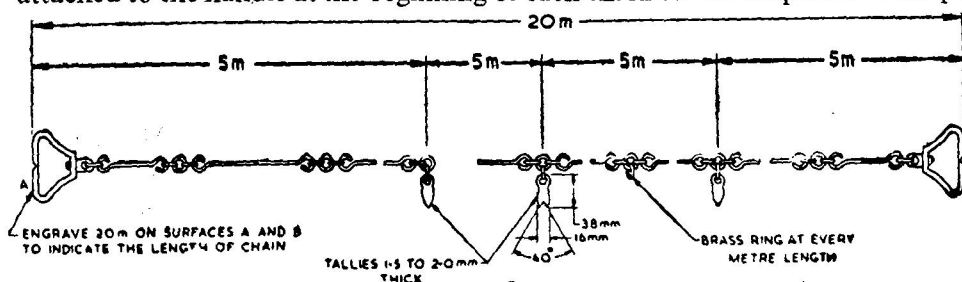


Fig. 1—20-Metre Chain

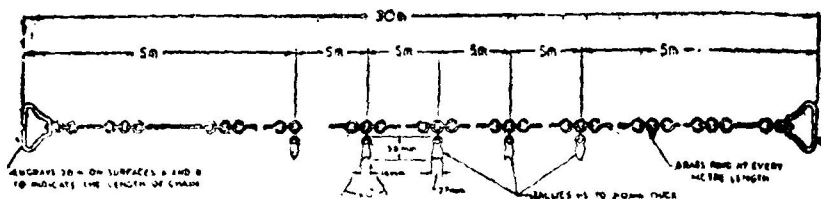


Fig. 2—30-Metre Chain

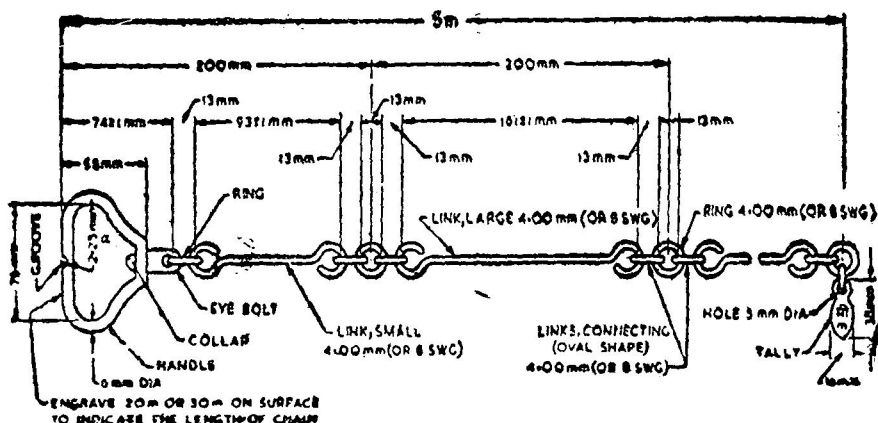


Fig. 3—Nomenclature and details of 5m length at the beginning and end of Surveying Chain."

SCHEDULE VI

SPECIFICATIONS FOR COMMERCIAL WEIGHING INSTRUMENTS

The whole of this schedule shall be replaced as follows:—

"SCHEDULE VI

(See rule 10)

SPECIFICATIONS FOR COMMERCIAL WEIGHING INSTRUMENTS

PART I—GENERAL REQUIREMENTS

1. Weighing instruments of the following categories are included in these specifications:—

- Beam Scales
- Counter Machines
- Steel-yards
- Platform Weighing Machines
- Weighbridges
- Spring Balances
- Crane Weighing Machines
- Automatic Weighing Machines
- Self-indicating and Semi-self-indicating counter Type Machines
- Person Weighing Machines.

2. (a) Weighing instruments shall be of such materials, design and construction that, under normal conditions of service:

- They maintain accuracy.
- They function satisfactorily without the need for frequent adjustments.

(iii) Excessive stresses do not develop in the vital parts.

(b) All weighing instruments having steelyards shall be of, what is commonly known as, the vibrating type.

(c) A vibrating type of instrument is an instrument which has its indicator oscillating on either side of the position of equilibrium.

(d) Weighing instruments shall be of good workmanship and finish.

(e) Weighing instruments having assembly parts, without which the accuracy of the instrument is affected, shall be so constructed that it is not possible to use the instrument without these parts. They shall be suitably identified with the weighing instruments of which they form essential components.

(f) Where an instrument has interchangeable or reversible parts, the interchange or reversal of such parts shall not affect the accuracy of the instrument.

(g) All graduations in weighing instruments shall consist of notches or uniform lines, sharply defined, which may be painted, printed, incised or embossed, so that the position of all pointers or sliding poises is clearly readable. All numbered graduations and their sub-divisions shall be marked by lines longer than the minor graduations. The minimum width apart of graduations on steelyards shall be not less than 1.5 mm of capacities below 3000 kg and 3 mm for capacities of 3000 kg and above.

(h) *Knife-Edges and Bearings*.—The knife-edges and bearings shall be agate or suitable hard material or of suitable quality steel. The steel knife-edges and bearings shall have the hardness specified below:

(i) For beam scales of classes C and D and with capacities 10 kg and below 54 Rc. minimum

(ii) For other weighing instruments 60 to 66 Rc.

(i) The knife-edges and bearings shall be replaceable wherever practicable.

(j) Knife-edges and bearings shall be accurately and firmly secured preferably by shanks and nuts, or by bolts and nuts or by set screws. The knife-edges and bearings shall be protected against corrosion and dirt.

(k) Racks and pinions shall be of suitable hardwearing material and shall be finished smooth.

(l) In the case of weighing instruments having steelyards, the nib shall remain secure in the notch.

(m) The knife-edge shall bear upon practically the whole length of the bearings.

3. *Marking*.—(a) All weighing machines shall be prominently, legibly and indelibly marked with the maker's name or his registered trade mark, model, capacity and class (wherever applicable).

Note.—The manufacturer's name or the registered trade mark shall be such as will not be mistaken for the stamp or the seal of the verification authority.

(b) Weighing instruments shall have inscribed on them their maximum weighing capacity in the following manner:—

“To weigh..... $\frac{t, \text{ kg, or g}}{\text{टन, किलो या ग्राम}}$ के लिये as appropriate.

(c) All numerals appearing on weighing instruments, beams, steelyards, dials etc. shall be Indo-Arabic numerals.

4. *Sealing*.—All weighing instruments shall be provided by the manufacturer with a plug or stud of soft metal to receive the stamp or seal of the verification authority. Such plug or stud shall be provided in a conspicuous part of the instrument and shall be made in such a manner as to prevent its removal without obliterating the seal.

5. *Tests*.—(a) All weighing instruments shall be tested after they have been properly cleaned, and in the condition of their normal use, wherever practicable. Non-portable weighing instruments shall be tested *in situ* in addition to any other test that may be conducted at the premises of the manufacturer or dealer.

(b) *Sensitiveness* is the least weight which when added to or removed from the loading platform or pan when the machine is in equilibrium, will cause an appreciable movement of the indicator from its position of equilibrium.

Error is the least weight, which when added or removed will bring the indicator to the position of poise or equilibrium from its position of imbalance.

(c) Weighing instruments shall be tested for sensitiveness and maximum error:

(i) The greatest error in excess on verification for graduations on the steelyard in the range corresponding to the first half of the capacity shall be not more than half the error allowed at full load; for graduations on the remaining part of the steelyard, the error shall be not more than the error prescribed at full load.

(ii) The greatest error in excess, on verification in the case of machine fitted with dial shall be half the weight represented by the interval between the consecutive graduation marks.

(iii) The permissible error in respect of graduations on machines fitted both with steelyard and dial shall be as prescribed above in (i) and (ii).

PART II—BEAM SCALES

1. *Definitions* —(a) A beam scale may be defined as a weighing instrument with equal arms, having three knife-edges, three bearings, an indicator (pointer) in the centre, and pans suspended from the end knife-edges. (See Fig. 1).

(b) *Sensitivity* is the ratio between “change in mass” in one pan of the balance and the corresponding deflection of the beam or of the attached pointer produced by this change. Sensitivity may, therefore, be expressed as mg per division.

(c) *Sensitiveness* is the least weight which when added to or removed from the loading pan causes an appreciable movement of the indicator from its position of equilibrium.

(d) *Greatest Error (due to inequality of Arms)*.—The greatest error is the weight required to bring the scale to equipoise with weights of equal mass placed on the two pans.

2. *Classes*.—(a) Beam scales may be of four classes A, B, C, and D depending on sensitivity or sensitiveness and greatest error specified in Tables 1, 2, 3 and 4, respectively.

(b) The trades for which the different classes of scales may be used are:

| Class of Scale | Use |
|----------------|---|
| A | Commercial Assay and in Dharamkantars for verifying the weight of bullion and precious stones. |
| B | Precious stones, jewels, pearls, bullion, precious metals, saffron and similar expensive commodities, chemists and druggists preparations, perfumery etc. |
| C | Base metals and commodities such as cereals, tea, coffee, tobacco, jute, cotton, dry fruits, spices, oil seeds, etc. |
| D | Weighment of cheaper commodities such as scrap iron, fuel wood, charcoal, vegetables, etc. |

3. *Capacities*.—Beam scales of the different classes may be of the capacities shown in Tables 1, 2, 3 and 4.

4. *Materials*.—(a) *Materials for Class A Beam Scales*.—Class A beam scales shall be made of non-magnetic materials only.

(b) *Materials for other classes of Beam Scales*.—(i) Beams shall be made of stainless steel, mild steel, brass, bronze or aluminium alloy.

(ii) Pans shall be made of stainless steel, mild steel, brass or bronze. The pans of class B beam scales may also be made of glass. In the case of beam scales of classes C and D, pans of hardwood shall be permitted, for capacities 100 kg and above. The pans of beam scales, when made of timber, shall be adequately reinforced with metallic plates and bands duly secured by bolts and nuts.

(iii) *Suspension*.—Pans shall be suspended from the beam by metal chains or metal strirrups; silk, or nylon thread may also be used for class B scales of capacity 100 g and below.

(iv) All mild steel parts used in beam scales shall be suitably protected against rust.

5. *Beam Fittings*.—(a) The knife-edges and bearings used in beam scales shall be of one of the following types:—

(i) *Agate-box*.—Wherein agate bearings are fitted in a brass or iron box, with side holes which permit the projecting ends of the knife-edges to pass into the boxes and rest on or rise to their bearings (See Fig. 2).

(ii) *Dutch-end*.—Wherein the end bearings are fixed inside plates bolted together across the beam to form a shackle (See Fig. 3).

(iii) *Swan-neck*.—Wherein the ends are curved and slotted, the bottom of the slot forming a knife-edge the extremities of the beam being widened in a direction at right angles to its length so that the base of the slot is parallel to the central knife-edge (See Fig. 4).

(iv) *Continuous knife-edge*.—Where the knife-edges rest on the bearings along their whole length (See Fig. 5).

6. *Construction*.—(a) Class A beam scales shall be provided with means for relieving the bearings and knife-edges.

(b) Every beam scale of class A shall be provided with a glass case. It shall also be provided with bubbles or a plumb line and levelling screws to facilitate levelling of the instrument.

(c) Beam scales of classes B, C, and D shall have the leading dimensions specified in Tables 5 to 9 and Fig. 6 to 10 as applicable.

(d) Class D beam scales shall be distinguished from class C scales by two holes of the same size (5 to 10 mm in diameter) through the beam, one on either side of the central knife-edge (See Fig. 10).

(e) The dimensions may vary within plus or minus 10 per cent of those prescribed in Tables 5 to 9.

(f) Beam scales of classes B, C, and D and capacities 50 kg and above shall be provided with balance balls or balance boxes. The balance ball or balance box shall be securely attached to one of the suspension chains or pans in such a manner that it is not possible to tamper with it easily. The balance ball or balance box shall not be so large as to contain loose material of weight exceeding 1 per cent of the capacity for scales of capacity 50 kg or exceeding 1 kg for scales of higher capacity.

(g) Beam scales other than of Class A shall not be provided with an attachment to adjust their sensitivity.

7. *Tests.*—(a) *Sensitiveness.*—The scales shall be tested for sensitiveness at full load and shall comply with the requirements specified in Tables 1 to 4.

(b) *Inequality of Arms Test.*—(i) In the case of beam with fixed hooks, the beam with hooks but without chains and pans shall be brought to a position of equilibrium. If there are detachable hooks, the Beam without the hooks shall be brought to equilibrium. Later the hooks may be attached and the beam again brought to equilibrium. The beam with hooks, chains and pans then brought to a position of equilibrium. It shall then be loaded with weights in both pans equal to the capacity of the scale and balanced. Where there is an attached hook, the chains and pans together with the loads in them shall be interchanged and extra weight added to one of the pans to balance the beam.

(ii) In the case of beams with detachable hooks, the hooks, chains and pans together with the load thereon shall be interchanged and the extra weight required to balance the beam noted. Half this extra weight shall not exceed the limits specified in Tables 1 to 4.

8. *Sealing.*—All beam scales shall be provided with a plug or plugs or stud or studs of soft metal to receive the stamp or seal of the verification authority. Such plug or plugs or stud or studs shall be provided in a conspicuous part of the scale and shall be made in such a manner as to prevent its removal without obliterating the seal or seals.

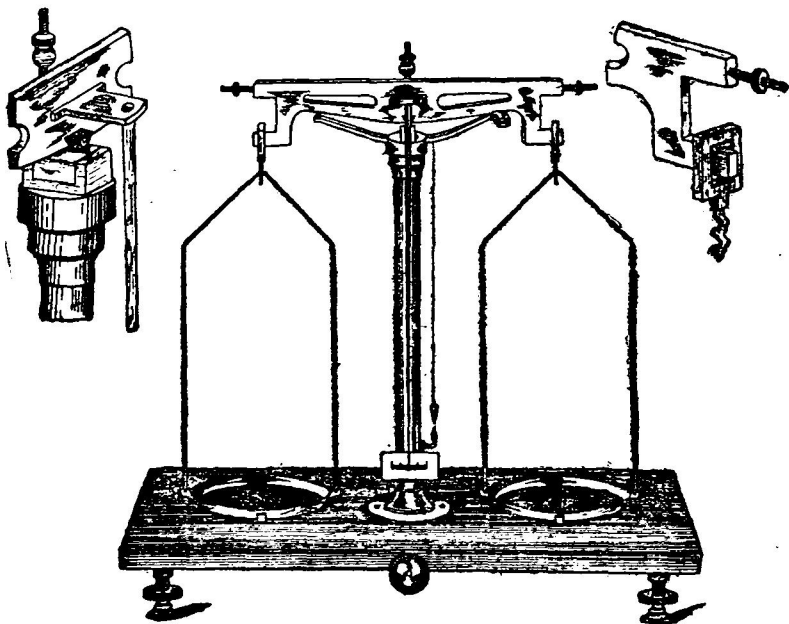


Fig. 1—Beam Scale

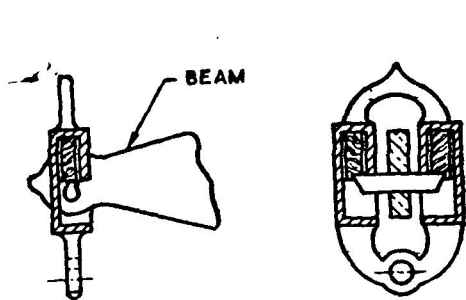


Fig. 2—Agate Box

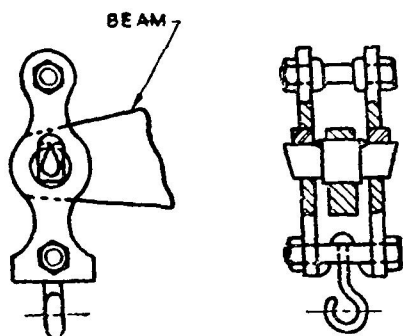


Fig. 3—Dutch End

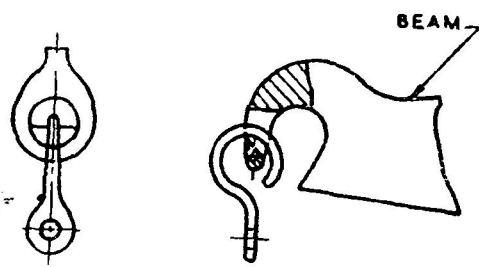


Fig. 4—Swan Neck

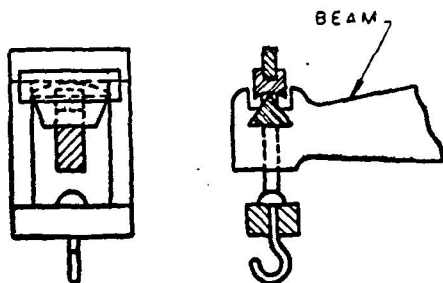


Fig. 5—Continuous Knife Edge

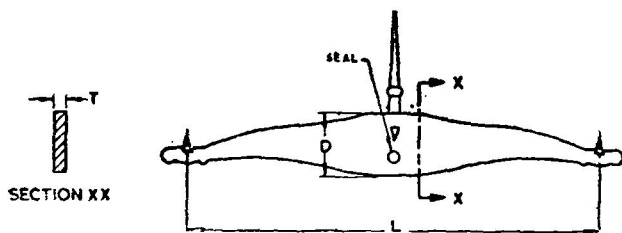


Fig. 6—Beam, Class B (Flat Type)

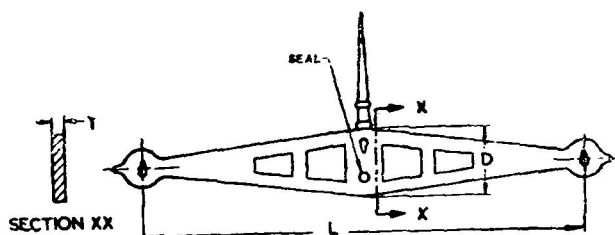


Fig. 7—Beam, Class B (Open Pattern Type)

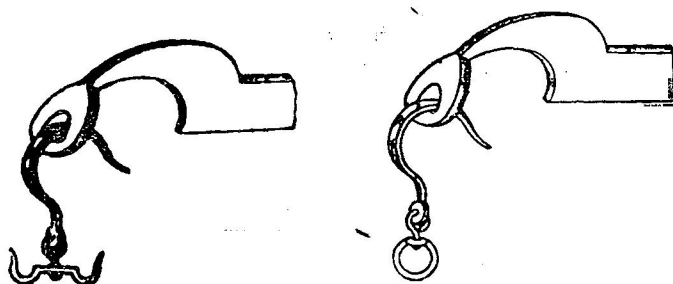
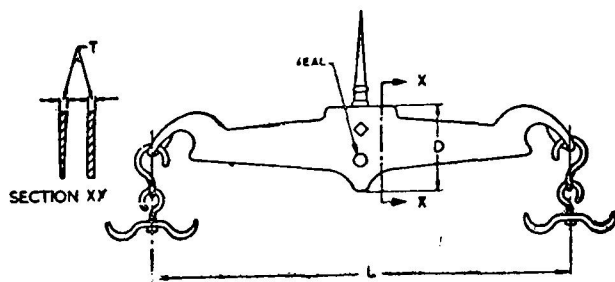


Fig. 8—Beam, Class C (Swan Neck with separable Flat Hooks)

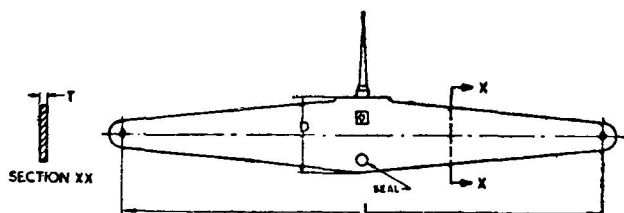


Fig. 9—Beam, Class C (Dutch End Type)

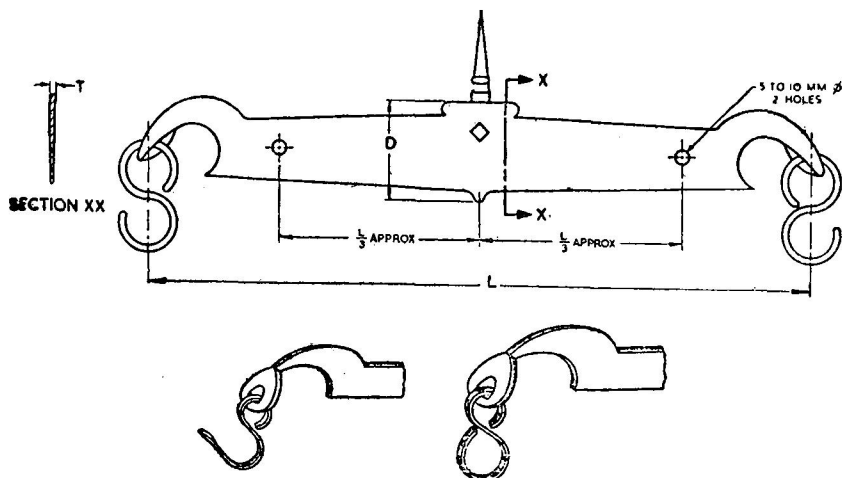


Fig. 10—Beam, Class D (Swan Neck with fixed Flat Hooks)

TABLE 1—LIMITS FOR SENSITIVITY AND GREATEST ERRORS FOR BEAM SCALES

CLASS 'A'

| Capacity | Verification | | Inspection | |
|----------|-----------------------------------|--|-----------------------------------|--|
| | Sensitivity per division of scale | Greatest error allowed when fully loaded | Sensitivity per division of scale | Greatest error allowed when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 2 g | 0.02 mg | 0.1 mg | 0.06 mg | 0.2 mg |
| 10 g | 0.05 mg | 0.2 mg | 0.15 mg | 0.4 mg |
| 20 g | 0.10 mg | 0.5 mg | 0.30 mg | 1.0 mg |
| 50 g | 0.20 mg | 1.0 mg | 0.60 mg | 2.0 mg |
| 200 g | 0.50 mg | 2.0 mg | 1.50 mg | 4.0 mg |
| 1 kg | 5.0 mg | 20.0 mg | 15.0 mg | 40.0 mg |
| 5 kg | 10.0 mg | 40.0 mg | 30.0 mg | 80.0 mg |
| 20 kg | 20.0 mg | 80.0 mg | 60.0 mg | 160.0 mg |
| 50 kg | 50.0 mg | 100.0 mg | 150.0 mg | 200.0 mg |

TABLE 2—LIMITS FOR SENSITIVENESS AND GREATEST ERRORS FOR BEAM SCALES

CLASS 'B'

| Capacity | Verification | | Inspection | |
|----------|---------------------------------|--|---------------------------------|--|
| | Sensitiveness when fully loaded | Greatest error allowed when fully loaded | Sensitiveness when fully loaded | Greatest error allowed when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 2 g | 0.2 mg | 0.4 mg | 0.60 mg | 0.8 mg |
| 5 g | 0.5 mg | 1.0 mg | 1.5 mg | 2.0 mg |
| 10 g | 1.0 mg | 2.0 mg | 3.0 mg | 4.0 mg |
| 20 g | 2.0 mg | 4.0 mg | 6.0 mg | 8.0 mg |
| 50 g | 5.0 mg | 10.0 mg | 15.0 mg | 20.0 mg |
| 100 g | 10.0 mg | 20.0 mg | 30.0 mg | 40.0 mg |
| 200 g | 20.0 mg | 40.0 mg | 60.0 mg | 80.0 mg |
| 500 g | 50.0 mg | 100.0 mg | 150.0 mg | 200.0 mg |
| 1 kg | 100.0 mg | 200.0 mg | 300.0 mg | 400.0 mg |
| 2 kg | 100.0 mg | 200.0 mg | 300.0 mg | 400.0 mg |
| 5 kg | 250.0 mg | 500.0 mg | 750.0 mg | 1.0 g |
| 10 kg | 500.0 mg | 1.0 g | 1.5 g | 2.0 g |
| 20 kg | 1.0 g | 2.0 g | 3.0 g | 4.0 g |
| 50 kg | 2.5 g | 5.0 g | 7.5 g | 10.0 g |
| 100 kg | 5.0 g | 10.0 g | 15.0 g | 20.0 g |
| 200 kg | 10.0 g | 20.0 g | 30.0 g | 40.0 g |

TABLE 3—LIMITS OF SENSITIVENESS AND GREATEST ERRORS FOR
BEAM SCALES

CLASS 'C'

| Capacity | Verification | | Inspection | |
|----------|---------------------------------------|---|---------------------------------------|---|
| | Sensitiveness when fully loaded | Greatest error allowed when fully loaded | Sensitiveness when fully loaded | Greatest error allowed when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 100 g | 100 mg | 200 mg | 300 mg | 400 mg |
| 200 g | 200 mg | 400 mg | 600 mg | 800 mg |
| 500 g | 500 mg | 1.0 g | 1.0 g | 2.0 g |
| 1 kg | 1.0 g | 2.0 g | 3.0 g | 4.0 g |
| 2 kg | 1.0 g | 2.0 g | 3.0 g | 4.0 g |
| 5 kg | 2.5 g | 5.0 g | 7.5 g | 10.0 g |
| 10 kg | 5.0 g | 10.0 g | 15.0 g | 20.0 g |
| 20 kg | 10.0 g | 20.0 g | 30.0 g | 40.0 g |
| 50 kg | 12.5 g | 25.0 g | 37.5 g | 50.0 g |
| 100 kg | 25.0 g | 50.0 g | 75.0 g | 100.0 g |
| 200 kg | 25.0 g | 50.0 g | 75.0 g | 100.0 g |
| 300 kg | 37.5 g | 75.0 g | 112.5 g | 150.0 g |
| 500 kg | 62.5 g | 125.0 g | 187.5 g | 250.0 g |
| 1000 kg | 125.0 g | 250.0 g | 375.0 g | 500.0 g |

TABLE 4—LIMITS FOR SENSITIVENESS AND GREATEST ERRORS FOR
BEAM SCALES

CLASS 'D'

| Capacity | Verification | | Inspection | |
|----------|---------------------------------------|---|---------------------------------------|---|
| | Sensitiveness when fully loaded | Greatest error allowed when fully loaded | Sensitiveness when fully loaded | Greatest error allowed when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 1 kg | 2.0 g | 3.0 g | 6.0 g | 6.0 g |
| 2 kg | 2.0 g | 3.0 g | 6.0 g | 6.0 g |
| 5 kg | 5.0 g | 7.5 g | 15.0 g | 15.0 g |
| 10 kg | 10.0 g | 15.0 g | 30.0 g | 30.0 g |
| 20 kg | 20.0 g | 30.0 g | 60.0 g | 60.0 g |
| 50 kg | 25.0 g | 37.5 g | 75.0 g | 75.0 g |
| 100 kg | 50.0 g | 75.0 g | 150.0 g | 150.0 g |
| 200 kg | 50.0 g | 75.0 g | 150.0 g | 150.0 g |
| 300 kg | 75.0 g | 150.0 g | 225.0 g | 300.0 g |
| 500 kg | 125.0 g | 250.0 g | 375.0 g | 500.0 g |
| 1000 kg | 250.0 g | 500.0 g | 750.0 g | 1000.0 g |

TABLE 5—LEADING DIMENSIONS OF BEAM FOR BEAM SCALES
CLASS 'B'
(With Pointer above the Beam)

| Capacity | Length between the ends (Nominal) L mm | Depth at the centre (Nominal) D mm | Thickness of plate at the centre (Nominal) T mm |
|--|--|--|---|
| (a) Flat Type with Pointer above Beam | | | |
| 2 g | 70 | 3 | 2 |
| 5 g | 95 | 3 | 2 |
| 10 g | 110 | 4 | 2 |
| 20 g | 120 | 20 | 3.15 |
| 50 g | 135 | 22 | 3.15 |
| 100 g | 150 | 25 | 4 |
| 200 g | 170 | 25 | 5 |
| 500 g | 200 | 30 | 5 |
| 1 kg | 250 | 40 | 6 |
| 2 kg | 300 | 45 | 6 |
| 5 kg | 450 | 50 | 6 |
| 10 kg | 500 | 58 | 8 |
| 20 kg | 600 | 58 | 10 |
| 50 kg | 750 | 100 | 15 |
| 100 kg | 1000 | 110 | 18 |
| 200 kg | 1250 | 125 | 25 |
| (b) Open Pattern Bridge Type with Pointer above Beam | | | |
| 200 g | 170 | 25 | 5 |
| 500 g | 260 | 37 | 5 |
| 1 kg | 310 | 44 | 5 |
| 2 kg | 350 | 48 | 5 |
| 5 kg | 450 | 60 | 6 |
| 10 kg | 500 | 70 | 8 |
| 20 kg | 600 | 80 | 10 |
| 50 kg | 750 | 120 | 15 |
| 100 kg | 1000 | 150 | 20 |

TABLE 6—LEADING DIMENSIONS OF BEAM FOR BEAM SCALES
CLASS 'B'
(Flat and Open Pattern Type with Pointer below the Beam)

| Capacity | Length between the ends (Nominal) L mm | Depth at the centre (Nominal) D mm | Thickness of plate at the centre knife- edge (Nominal) T mm |
|----------|--|--|--|
| 1 | 2 | 3 | 4 |
| 2 g | 70 | 3 | 2 |
| 5 g | 95 | 3 | 2 |
| 10 g | 110 | 4 | 2 |

| 1 | 2 | 3 | 4 |
|--------|------|-----|------|
| 20 g | 120 | 20 | 3.15 |
| 50 g | 135 | 20 | 3.15 |
| 100 g | 150 | 20 | 4 |
| 200 g | 200 | 20 | 6 |
| 500 g | 235 | 25 | 8 |
| 1 kg | 300 | 30 | 8 |
| 2 kg | 320 | 30 | 9 |
| 5 kg | 350 | 32 | 10 |
| 10 kg | 400 | 40 | 12 |
| 20 kg | 500 | 50 | 14 |
| 50 kg | 700 | 70 | 18 |
| 100 kg | 800 | 80 | 20 |
| 200 kg | 1250 | 125 | 25 |

TABLE 7—LEADING DIMENSIONS OF BEAM FOR BEAM SCALES

CLASS 'C'

(Swan Neck Type)

| Capacity | Length between the ends (Nominal) | Depth at the centre (Nominal) | Thickness of plate at the centre knife- edge (Nominal) |
|----------|---|-------------------------------------|---|
| | L mm | D mm | T mm |
| 1 | 2 | 3 | 4 |
| 100 g | 150 | 30 | 4 |
| 200 g | 200 | 40 | 5 |
| 500 g | 300 | 40 | 6 |
| 1 kg | 350 | 45 | 6 |
| 2 kg | 400 | 45 | 6 |
| 5 kg | 500 | 70 | 6 |
| 10 kg | 600 | 80 | 6 |
| 20 kg | 750 | 116 | 6 |
| 50 kg | 900 | 108 | 8 |
| 100 kg | 1200 | 154 | 14 |
| 200 kg | 1350 | 138 | 16 |
| 300 kg | 1650 | 148 | 18 |
| 500 kg | 1800 | 178 | 25 |
| 1000 kg | 2000 | 200 | 32 |

TABLE 8—LEADING DIMENSIONS OF BEAM FOR BEAM SCALES

CLASS 'C'
(Dutch-End Type)

| Capacity | Length between the end knife- edge (Nominal) L mm | Depth at the centre (Nominal) D mm | Thickness of plate at the centre knife- edge (Nominal) T mm |
|----------|--|--|--|
| 1 | 2 | 3 | 4 |
| 100 g | 150 | 35 | 4 |
| 200 g | 200 | 40 | 5 |
| 500 g | 300 | 40 | 6 |
| 1 kg | 350 | 45 | 6 |
| 2 kg | 400 | 45 | 6 |
| 5 kg | 450 | 75 | 6 |
| 10 kg | 450 | 70 | 8 |
| 20 kg | 600 | 70 | 8 |
| 50 kg | 750 | 80 | 8 |
| 100 kg | 900 | 120 | 14 |
| 200 kg | 900 | 133 | 16 |
| 300 kg | 1050 | 142 | 16 |
| 500 kg | 1350 | 192 | 20 |
| 1000 kg | 1650 | 203 | 25 |

TABLE 9—LEADING DIMENSIONS OF BEAM FOR BEAM SCALES

CLASS 'D'

| Capacity | Length between end knife- edge (Nominal) L mm | Depth at the centre (Nominal) D mm | Thickness of plate at the centre (Nominal) T mm |
|-------------------------------------|--|--|--|
| (a) Swan-neck with fixed flat-hooks | | | |
| 1 kg | 350 | 45 | 6 |
| 2 kg | 400 | 45 | 6 |
| 5 kg | 550 | 70 | 6 |
| 10 kg | 600 | 80 | 6 |
| 20 kg | 750 | 116 | 6 |
| 50 kg | 900 | 108 | 8 |
| 100 kg | 1200 | 154 | 14 |
| 200 kg | 1350 | 138 | 16 |
| 300 kg | 1650 | 148 | 18 |
| (b) With detachable flat-hooks | | | |
| 500 kg | 1800 | 178 | 25 |
| 1000 kg | 2000 | 200 | 32 |

PART III—COUNTER MACHINES

1. *Definition.*—A counter machine is an equal armed weighing instrument of capacity not exceeding 50 kg the pans of which are above the beam. Figure 1 illustrates a typical counter machine.

2. *Capacities.*—The machines may be of the following maximum capacities:—

500 g, 1 kg, 2 kg, 3 kg, 5 kg, 10 kg, 15 kg, 20 kg, 25 kg, and 50 kg.

3. *General requirements.*—(a) When the beam or body has two sides they shall be connected together by not less than two cross-bars. The supports for the pans shall be of a suitable rigid structure such as cross members strengthened by straps. Central pieces or forks shall be fixed so that they are not twisted or dislocated.

(b) Bearing surfaces, knife-edges and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife-edges and bearing shall be so fitted as to allow the beam to move freely. The knife-edges shall rest upon the bearings along the whole length of their working part.

(c) A counter machine may have a balance box for minor adjustments. In such a case, the balance box shall be permanently fixed beneath the weight pan and shall be large enough to contain loose material to an amount upto one per cent of the capacity of the machine. No other adjusting contrivance shall be used.

(d) The pans may be of any suitable material such as mild steel, stainless steel, brass or bronze. They may be of any convenient shape.

(e) The minimum fall either way, on counter machines shall be as follows:—

| Capacity | Fall |
|-----------------------------|-------|
| 500 g, 1 kg and 2 kg .. | 6 mm |
| 3 kg, 5 kg, 10 kg, 15 kg .. | 10 mm |
| 20 kg and 25 kg .. | 12 mm |
| 50 kg .. | 13 mm |

4. *Tests.*—(a) The machines shall be tested on a horizontal level plane.

(b) *Sensitiveness and Error.*—(i) The machine shall be tested for sensitiveness at full load with the beam in horizontal position. The addition of the weight specified in cols. 2 or 4 as the case may be in Table 1 shall cause the pointer to rise or fall to the limit of its range of movement.

(ii) The error is the weight, if any, required to bring the beam of the instrument to a horizontal position when fully loaded with weights equal to its capacity on both pans. It shall not exceed the limits specified in cols. 3 and 5 as the case may be of Table 1.

(c) The test for sensitiveness shall be carried out only with the pans loaded to the full capacity of the machine.

(d) When the goods pan is in the form of a scoop, the machine shall be correct to the prescribed limits of error if half the full load is placed against the middle of the back of the scoop and the other half at any position on the scoop.

(e) When the goods pan is not in the form of a scoop, the counter machines shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the goods pan anywhere within a distance from the centre equal to one third of the greatest length of the pan, or if the pan has a vertical side against the middle of that side, the weight being entirely on the weight pan, but in any position on it.

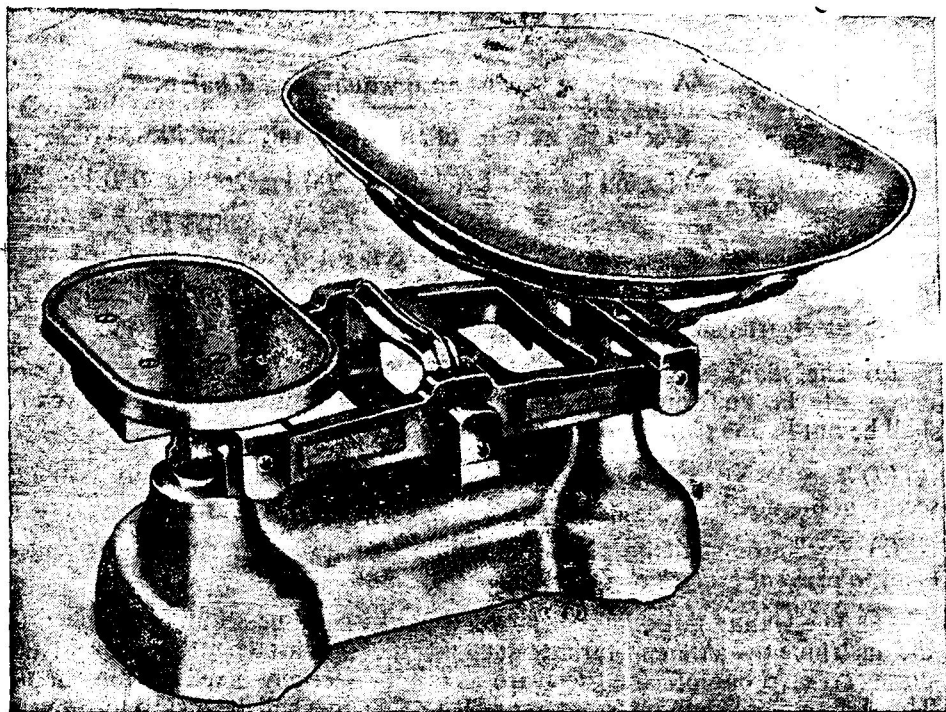


Fig. 1—Counter Machine

TABLE 1—SENSITIVENESS AND ERRORS FOR COUNTER MACHINES

| Capacity | Verification | | Inspection | |
|----------|---------------------------------|--|---------------------------------|--|
| | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded | Sensitiveness when fully loaded | Greatest error allowed when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 500 g | 1.5 g | 2.2 g | 4.5 g | 4.5 g |
| 1 kg | 2.0 g | 3.0 g | 6.0 g | 6.0 g |
| 2 kg | 3.0 g | 4.5 g | 9.0 g | 9.0 g |
| 3 kg | 4.0 g | 6.0 g | 12.0 g | 12.0 g |
| 5 kg | 6.0 g | 9.0 g | 18.0 g | 18.0 g |
| 10 kg | 7.0 g | 10.5 g | 21.0 g | 21.0 g |
| 15 kg | 8.0 g | 12.0 g | 24.0 g | 24.0 g |
| 20 kg | 9.0 g | 13.5 g | 27.0 g | 27.0 g |
| 25 kg | 10.0 g | 15.0 g | 30.0 g | 30.0 g |
| 50 kg | 15.0 g | 30.0 g | 45.0 g | 60.0 g |

5. *Sealing.*—Each machine shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or by some suitable method.

PART IV—STEEL YARDS

1. *Definition.*—A steelyard means an unequal armed balance.

2. *Capacities.*—Steelyards may be of the following capacities:—

5 kg, 10 kg, 20 kg, 50 kg, 100 kg, 150 kg, 200 kg, 250 kg, 300 kg, 500 kg and 1000 kg.

3. *Design and Construction.*—(a) The general design of steelyard shall be as given in Fig. 1.

(b) Steelyards shall be made of either mild steel or stainless steel.

(c) The shank shall be perfectly straight but its cross-section need not necessarily be uniform throughout. Notches or graduations on the shank shall be out in one plane and at right angles to the shank.

(d) The design of the sliding poise shall be such that the nib remains secure in the notch.

(e) Steelyards shall be provided with a stop or other suitable arrangement to prevent excessive oscillation of the shank.

(f) The sliding poise and suspending hooks shall be securely attached to the instrument. All end-fittings such as the nut attached to prevent the poise carrier riding off the steelyard, shall be securely fixed to the shank. The sliding poise shall be freely movable and there shall be a stop to prevent it from travelling behind the zero mark. Steelyards having counter poise or travelling poise shall be provided with a hole or other suitable means for the future adjustment of the counterpoise or travelling poise, such hole being undercut. Wherever loose material is used in the travelling poise, it shall be securely enclosed.

(g) Steelyards shall be neither reversible nor have three hooks, and shall not be of counter type.

(h) Steelyards shall be provided with a vertical pointer directly above the fulcrum to indicate the true equilibrium.

(i) If a movable hook, tray, or bucket, is used it shall form an essential part of the steelyard without which it is not possible to balance the steelyard.

4. *Tests.*—(a) Steelyards shall be tested at full load for sensitiveness and error, and shall comply with the requirements of Table 1.

(i) The test for sensitiveness shall be carried out at full load with the steelyard in horizontal position. The addition of the weight specified in column 2 or 4 of Table 1 shall make the steelyard turn.

(ii) The error or the weight, if any, required to bring the steelyard to a horizontal position when fully loaded shall not exceed the limits specified.

(b) Each numbered graduation shall be tested and the instrument shall be correct whether the test is carried out with increasing or decreasing loads.

(c) The intermediate graduations shall also be tested to see that they are correct and are at proper distance apart.

(d) No test for sensitiveness at a lower load shall be made.

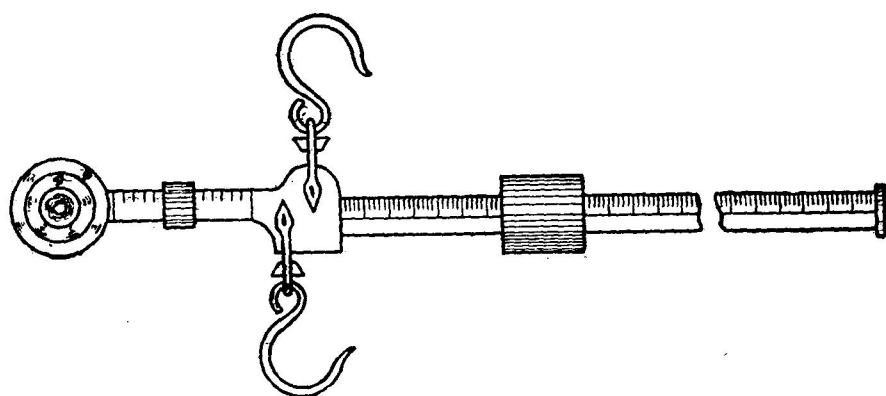


Fig. 1—Steelyard

TABLE 1—SENSITIVENESS AND ERRORS FOR STEELYARDS

| Capacity | Verification | | Inspection | |
|----------|---------------------------------|--|---------------------------------|--|
| | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded |
| | 2 | 3 | 4 | 5 |
| 5 kg | 2.5 g | 3.8 g | 7.5 g | 7.5 g |
| 10 kg | 5.0 g | 7.5 g | 15.0 g | 15.0 g |
| 20 kg | 10.0 g | 15.0 g | 30.0 g | 30.0 g |
| 50 kg | 25.0 g | 50.0 g | 75.0 g | 100.0 g |
| 100 kg | 40.0 g | 80.0 g | 120.0 g | 160.0 g |
| 150 kg | 60.0 g | 120.0 g | 180.0 g | 240.0 g |
| 200 kg | 80.0 g | 160.0 g | 240.0 g | 320.0 g |
| 250 kg | 100.0 g | 200.0 g | 300.0 g | 400.0 g |
| 300 kg | 120.0 g | 240.0 g | 360.0 g | 480.0 g |
| 500 kg | 200.0 g | 400.0 g | 600.0 g | 800.0 g |
| 1000 kg | 400.0 g | 800.0 g | 1200.0 g | 1600.0 g |

5. *Sealing.*—Each instrument shall be provided with a plug or stud of soft metal on the front face of the shoulder of the steelyard for receiving the seal of the verification authority. Such a plug or stud shall be made irremovable by undercutting or by some other suitable method.

PART V—PLATFORM WEIGHING MACHINES

1. *Definition.*—(a) A platform weighing machine means a weighing instrument with compound levers and with the goods receptacle generally in the form of a platform. The capacity of these machines shall not exceed 3 tonnes and the weight of the load is indicated with steelyard or other form of indicator.

(b) The nomenclature of a platform weighing machine is given in Fig. which shows a “loose weight” type machine. In the case of “no loose

weight" type machine, there are two sliding poises, one for the major bar and the other for the minor bar of the steelyard.

2. *Capacities*.—Platform weighing machines may be of the following capacities:—

50 kg, 100 kg, 150 kg, 200 kg, 250 kg, 300 kg, 500 kg, 1000 kg, 1500 kg, 2000 kg, and 3000 kg.

3. *General requirements*.—(a) *Steelyard*.—(i) The steelyard in the platform weighing machine shall not have any readily removable part except the support for proportional weights. There shall be one or more stops to prevent the sliding poise or poises from travelling behind the zero mark. The minimum travel of a steelyard in platform machines shall be 10 mm either way.

(ii) The top and bottom of the guide and/or steelyard shall be fitted with non-magnetic material.

(iii) When the steelyard is provided with notches, these shall be suitably protected.

(iv) The value of the smallest division on the minor bar shall not exceed the greatest error allowed for that capacity except for machines of capacities 200 kg and below in which case the value of the smallest division may exceed error prescribed for that capacity but shall not exceed 100 g.

(v) The value of the smallest graduation on dials or minor steelyards, and wherever possible major steelyards shall be 1 g, 2 g, 5 g or any multiple by 10, or any power of 10 (for instance 100, 1000 etc.) of any of these weights.

(b) *Platform*.—(i) The permissible extension of the platform on either side of the box in the case of extended platform shall be not more than 25 per cent of the length of the box.

(ii) If a movable hutch, barrow, frame or bucket is used with the ordinary platform, it shall form an essential part of the machine without which it is not possible to balance the machine. The movable hutch, barrow, frame or bucket shall be identified with the machine and when in position on the platform, it shall be as central as possible.

(c) *Balancing arrangement*.—(i) Where a balance box is provided on the steelyard, the balancing ball shall not be easily accessible.

(ii) The balancing arrangement for daily wear and tear shall have a range not exceeding 0.5 per cent of the capacity of the machines and not less than 0.125 per cent of the capacity each way (See Table 1). The balance box containing the balancing ball shall be securely attached to the steelyard preferably by passing a bolt through the casing to the steelyard. The balancing ball shall be actuated by a detachable key.

(d) In the case of platform machines provided with dials:

(i) The racks and pinions shall be of suitable hard wearing material and shall be finished smooth;

(ii) The extremity of the pointer shall, in no position be at a greater distance than 5mm from the graduated surface of the dial. Further, the extremity of the pointer shall be on the graduated portion of the dial, and it shall be so made as not to obscure the graduations or make them difficult to read; and

(iii) The dial shall be graduated into equal parts and the minimum width between the graduations shall be not less than 2mm.

(e) The machine may, if required, have arrangement for marking up the tare.

(f) For machines without proportional weights, the total capacity shall be that indicated on the major steelyard.

4. *Proportional Weights*.—(a) All loose proportional weights in a platform machine shall be identified with the machine by a number or any

other suitable mark of identification, which shall be indelible. The counterpoise weights shall be marked with their equivalent weights as indicated in Fig. 2.

(b) The proportional weights shall be hexagonal in shape with a slot of suitable size to allow them being placed on the counter balance (See Fig. 2).

(c) The proportional weights shall be made of cast iron or brass.

(d) The proportional weights shall have one rectangular loading hole which shall be undercut or tapering outwards so as to hold lead securely for adjustments. The undercut hole shall be reasonably large to accommodate the lead required for adjustments. The surface of the lead in the loading hole of a new proportional weight shall be at least 3mm inside from the bottom surface of the weight.

(e) In the case of platform machines provided with proportional weights the smallest denomination of the proportional weights shall be equivalent to the weights represented by the maximum graduation on the steelyard.

(f) The denomination of the proportional weights shall be 1kg, 2 kg, 5 kg or a multiple or sub-multiple by 10 or a power of 10 (100, 1000 etc.) of any of these weights. Any number of proportional weights in any one of the afore-said denominations may be included provided the total of all the proportional weights does not exceed the capacity of the weighing instrument.

Note.—While arriving at the capacity of the platform machines, the maximum graduation shown on the steelyard in the case of loose-weight 'platform machines' and on the minor bar in the case of 'no-loose-weight' type machines shall not be taken into account.

(g) The total capacity of the machine shall include the capacity of graduated tare bar or bars wherever provided.

Note.—When tare bars are used and are not graduated except with a zero mark only, they shall not be taken into account when calculating the capacity of the machines. Ungraduated tare bars shall be marked with zero.

5. Tests and test requirements.—(a) The steelyard of a platform weighing machine shall remain horizontal at no-load.

(b) Platform weighing machines shall be tested to verify the accuracy of graduations or notches up to the total capacity.

(c) All loose proportional weights, where these are provided, shall be tested and then suitably sealed to prevent tampering.

(d) With one quarter of the maximum load (or as near thereto as practicable) placed in the middle or at any of the corners of the platform, the platform weighing machine shall show the correct weight within half the limits of error prescribed in Table 2 in col. 3 for non-dial type machines and in col. 4 for dial type machines.

(e) Platform weighing machines with steelyard arrangement shall be tested for sensitiveness and error at full load or as near to it as practicable. The sensitiveness and permissible error shall not exceed the limits prescribed in col. 2 and 3 respectively of Table 2.

(i) The machines shall be tested at loads corresponding to the major divisions or notches.

(f) With the exception of sensitiveness test [See (e) above], the other tests mentioned above shall be carried out in a similar manner on dial type machines also. These machines shall comply with the requirements prescribed in col. 4 of Table 2.

6. Sealing.—(a) Platform machines of the dial type shall be fitted with a soft-metal plug for receiving the seal of the verification authority and

wherever practicable, this plug shall be passed through the dial and frame. The plug or stud fitted on the dial shall be so supported as to prevent the risk of any damage to the instrument.

(b) On platform machines other than those of the dial type a plug or stud shall be provided in a conspicuous position on the indicating lever or steel-yard.

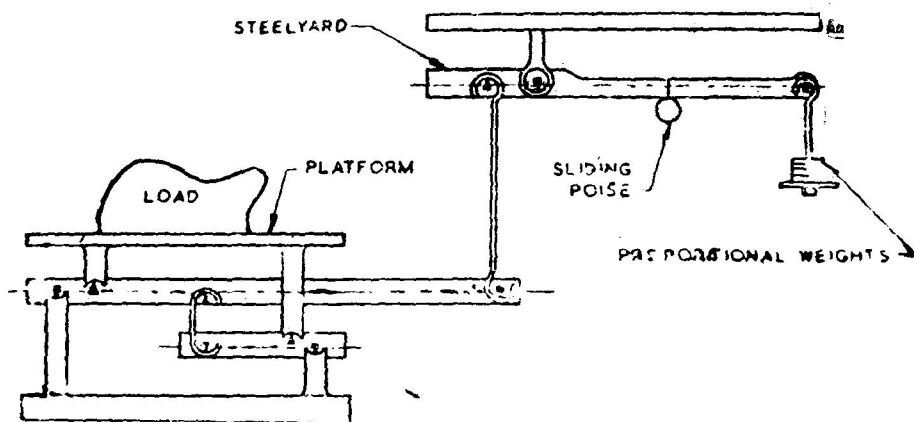


Fig. 1—Platform Weighing Machine

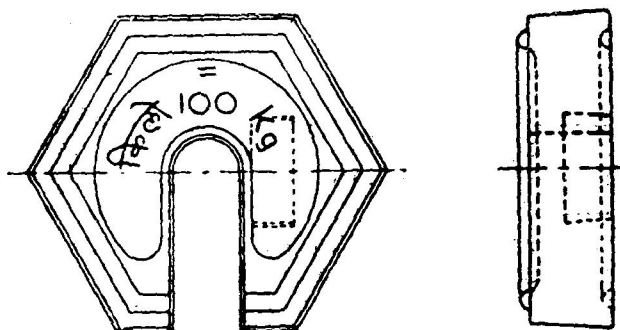


Fig. 2—Proportional Weight

TABLE 1—RANGE OF BALANCING ARRANGEMENT

| Capacity | Range of Balancing Arrangement | |
|----------|----------------------------------|---|
| | Maximum 0.5 per cent of capacity | Minimum 0.125 per cent of capacity each way |
| 1 | 2 | 3 |
| 50 kg | 250 g | 60 g |
| 100 kg | 500 g | 125 g |
| 150 kg | 750 g | 185 g |
| 200 kg | 1 kg | 250 g |
| 250 kg | 1.3 kg | 310 g |
| 300 kg | 1.5 kg | 350 g |

| 1 | 2 | 3 |
|---------|---------|---------|
| 500 kg | 2.5 kg | 625 g |
| 1000 kg | 5.0 kg | 1.25 kg |
| 1500 kg | 7.5 kg | 1.88 kg |
| 2000 kg | 10.0 kg | 2.50 kg |
| 3000 kg | 15.0 kg | 3.25 kg |

TABLE 2—SENSITIVENESS AND ERRORS FOR PLATFORM MACHINES

| Capacity | Verification | | | Inspections | | |
|----------|---|--|--|---|--|--|
| | Sensi- tiveness when fully loaded | Greatest error allow- ed in excess or in deficiency when fully loaded for | | Sensi- tiveness when fully loaded | Greatest error allowed in excess or in deficien- cy when fully loaded for | |
| | | Non- dial type machines | Platform machines fitted with dials | | Non- dial type machines | Platform machines fitted with dials |
| 50 kg | 10 g | 20 g | A weight | 30 g | 40 g | A weight |
| 100 kg | 20 g | 40 g | correspon- | 60 g | 80 g | corresponding |
| 150 kg | 30 g | 60 g | ding to one | 90 g | 120 g | to the |
| 200 kg | 40 g | 80 g | half the | 120 g | 160 g | interval bet- |
| 250 kg | 50 g | 100 g | interval | 150 g | 200 g | ween consecu- |
| 300 kg | 60 g | 120 g | between | 180 g | 240 g | tive gradu- |
| 500 kg | 100 g | 200 g | consecutive | 300 g | 400 g | ations. |
| 1000 kg | 125 g | 250 g | graduations. | 375 g | 500 g | |
| 1500 kg | 200 g | 400 g | | 600 g | 800 g | |
| 2000 kg | 250 g | 500 g | | 750 g | 1000 g | |
| 3000 kg | 300 g | 1000 g | | 900 g | 2000 g | |

PART VI—SPRING BALANCES

1. *Definition.*—(a) A spring balance is an instrument which, on the application of the load to be weighed, indicates the whole weight by the extension or compression of the spring, such extension or compression being registered by means of a pointer on a dial.

(b) The general arrangement of spring balance without scoop and support is illustrated in Fig. 1.

2. *Capacities.*—The spring balance shall be of one of the capacities shown in Table 1.

3. General requirements.—(a) In addition to the general requirements specified in Part I of this schedule, spring balance shall comply with the requirements given below.

(b) The spring balance with the goods pan below the spring shall be suspended permanently from a stand, support or bracket.

(c) If pans are provided for the balance, they shall be made of brass, bronze, cast iron, mild steel or stainless steel. Metal chains or metal supports shall be provided if pans are suspended. When mild steel is used, it shall be suitably protected against corrosion.

(d) The extremity of the pointer shall not exceed 1.0 mm in width and shall not be more than 3.0 mm away from the graduation on the dial.

(e) The dial shall be graduated into equal parts and the width apart of the graduations shall be not less than 2 mm.

(i) The weight corresponding to the interval between consecutive graduation marks shall not exceed the values given in Table I.

(ii) When the graduation commences at a fixed load, the position of the index, when there is no load shall be clearly indicated by a zero mark.

(f) When a spring balance is provided with an adjustable indicator, the range of adjustment shall not exceed one per cent of the capacity of the instrument, except the case of instruments used for mining purposes where it shall not exceed two per cent.

(g) Spring balances shall have a device incorporated in the design to prevent overloading.

(h) The body of the spring balances shall be constructed of brass, cast iron, mild steel or any other suitable material, and shall be sufficiently robust in construction.

4. Test.—(a) When the pan is below the spring, the prescribed limits of error shall not be exceeded, wherever the load is placed on it.

(b) If the pan is in the form of a scoop and half the full load is placed at the farthest point from the centre of the scoop and the other half at any position, balance shall be correct to the prescribed limits of error.

(c) When the pan is not in the form of a scoop, the spring balance shall indicate the correct weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the pan any where within a distance from the centre equal to one third of the greatest length of pan, or if that pan has a vertical side against the middle of that side, the weight being entirely on the weight pan.

(d) Each graduation shall be tested.

(e) The instrument shall be correct whether the test is made by progressively increasing or decreasing the loads, provided that in either case the spring shall be allowed to vibrate before the reading is taken.

(f) The balance shall be loaded to its capacity, and the load maintained for a period of 24 hours after which it shall be removed. Four hours after removal of the load, the balance shall not show any permanent set. Further, when tested as stated in (e) above, it shall record correct readings.

(g) Spring balances shall not be tested for sensitiveness.

5. Sealing.—Spring balances shall be fitted with a soft plug to receive a seal and wherever practicable, this plug shall pass through the dial or frame. The plug or stud shall be so supported as to allow no risk or injury to the instrument.

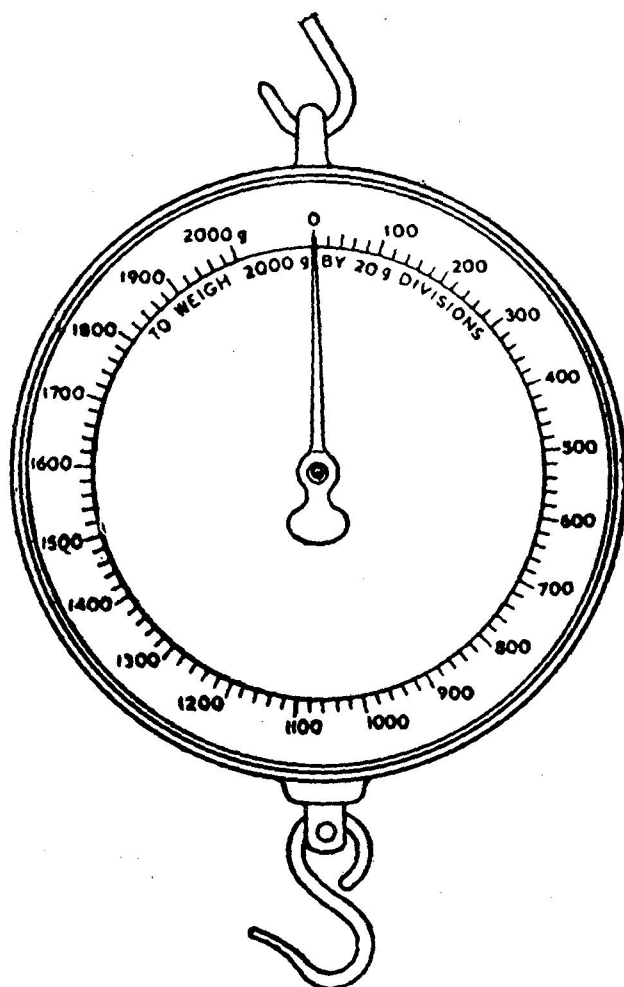


Fig. 1—Spring Balance

TABLE 1—MAXIMUM ERRORS FOR SPRING BALANCES

| Capacity | Weight corresponding to interval between consecutive graduations Max. | Maximum Error | Remarks |
|----------|--|---|---|
| 1 | 2 | 3 | 4 |
| 1 kg | 5 g | A weight corresponding to 25 per cent of the interval between successive graduations. | While fixing the diameter of effective circle on dial of one revolution, a blank space of the 15 mm at the end of graduations has to be provided. |
| 2 kg | 20 g | | |
| 5 kg | 20 g | | |
| 10 kg | 50 g | | |
| 15 kg | 50 g | | |
| 20 kg | 100 g | A weight corresponding to 50 per cent of the interval between | |

| 1 | 2 | 3 | 4 |
|--------|--------|---|---|
| 30 kg | 100 g | successive graduations. | |
| 50 kg | 200 g | | |
| 100 kg | 500 g | | |
| 150 kg | 1.0 kg | | |
| 200 kg | 1.0 kg | | |
| 300 kg | 1.0 kg | In the case of multi-revolution spring balances, the minimum blank space requirement shall not apply. | |
| 500 kg | 2.0 kg | | |

Note.—Inspection tolerances shall be double the values shown in col. 3.

PART—VII WEIGHBRIDGES

1. *Definition.*—A weighbridge shall mean a weighing instrument constructed with compound levers, with the indicator system carried on foundations separate from the lever systems to weigh loads of capacities 1000 kg (one tonne) and over, through the medium of proportional weights or indicating mechanism. A typical weighbridge is illustrated in Fig. 1.

2. *Capacities.*—Weighbridges may be of the following capacities:—

1t, 2t, 3t, 5t, 10t, 15t, 20t, 25t, 30t, 40t, 50t, 60t, 80t, 100t, 150t, 200t, 300t, and 400t.

3. *General requirements.*—(a) In addition to the general requirements specified in Part I of this schedule, weighbridges shall comply with the requirements given below.

(b) *Framework.*—Where the weighbridge is fitted with a framework, it shall be built up of mild steel sections or cast iron or cast steel. It shall be of rigid structure, suitably strengthened so that it is capable of resisting excessive vibrations and shall not throw the lever system out of alignments. Brackets shall be provided on the side and end frames to secure the framework.

(c) *Steelyard.*—(i) The steelyard of a weighbridge shall not have any readily removable parts except the support for the proportional weights. There shall be one or more stops to prevent the sliding poise or poises from travelling behind the zero mark.

(ii) The minimum travel of the steelyard in weighbridges shall be 13 mm each way.

(iii) The top and bottom of the guide and/or steelyard shall be fitted with non-magnetic material.

(iv) When the steelyard is provided with notches, the latter shall be suitably protected.

(v) The value of the smallest division on the minor bar shall not exceed the greatest error allowed for that capacity (See Table 2).

(d) *Graduations.*—The value of the smallest graduation on dials or minor steelyards, and wherever possible major steelyards of weighing instruments shall be 1g, 2g, 5g, or any multiple by 10 or a power of 10 (for instance, 100 and 1000 etc.) of any of these weights.

(e) *Platform.*—(i) The platform shall be either chequered or plain, and shall be made of cast iron or steel plates. It shall be rigid and sufficiently strong to carry the maximum load. The foundation shall provide for a manhole to facilitate easy access to the pit.

(ii) If a movable hutch, barrow, frame or bucket is used with the ordinary platform, it shall form an essential part of the machine without which it is not

possible to balance the machine. The movable hutch, barrow, frame or bucket shall be identified with the machine and when in position on the platform, it shall be as central as possible.

(f) *Balancing arrangement*.—The balancing arrangement for daily wear and tear shall have a range not exceeding 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way. The balance box containing the balancing ball shall be securely attached to the steelyard, preferably by passing a bolt through the casting to the steelyard. The balancing ball shall be actuated by a detachable key.

(g) In the case of weighbridges provided with dials:

(i) Racks and pinions shall be of suitable hard-wearing material finished smooth.

(ii) The extremity of the pointer shall, in no position be at a greater distance than 5mm from the graduated surface of the dial. Further, the extremity of the pointer shall be on the graduated portion of the dial, and it shall be so made as not to obscure the graduation or make them difficult to read.

(iii) The dials shall be graduated into equal parts and the minimum width between graduations shall be not less than 2mm.

(h) For no-loose weight steelyard machines, the total capacity shall be that which is indicated on the steelyard.

4. *Proportional Weights*.—(a) All loose proportional weights shall be identified with the machine by a number or any other suitable mark of identification which shall be indelible. They shall be marked with their equivalent weights as shown in Fig. 2.

(b) Proportional weights shall be hexagonal in shape with a slot of suitable size to allow their being placed on the counter balance (See Fig. 2).

(c) The proportional weights shall be made of cast iron or brass.

(d) The proportional weights shall have one rectangular loading hole which shall be undercut or tapering outwards so as to hold lead securely for adjustment. The surface of the lead in the loading hole of a new proportional weight shall be at least 3mm inside from the bottom surface of the weight.

(e) The smallest denomination of the proportional weight shall be equivalent to the weight represented by the maximum graduation on the minor bar.

(f) The denominations of the proportional weights shall be 1 kg, 2 kg, 5 kg, or a multiple or submultiple by 10 or a power of 10 (100, 1000 etc.) of any of these weights. Any number of proportional weights in any one of the aforesaid denominations may be included provided the total equivalent of all the proportional weights does not exceed the capacity of the weighing instrument.

Note.—While arriving at the capacity of the weighbridge, the maximum graduation shown on the steelyard in the case of 'loose-weight' weighbridges and on the minor bar in the case of 'no-loose-weight' type weighbridges shall not be taken into account.

(g) The total capacity of the machine shall include the capacity of graduated tare bar or bars wherever provided.

Note.—When tare bars are used and are not graduated except with a zero mark only, they shall not be taken into account when calculating the capacity of the machines. Ungraduated tare bars shall be marked with zero.

5. *Tests and Test requirements*.—(a) The steelyard of a weighbridge shall remain horizontal at no-load.

(b) Weighbridges shall be tested to verify the accuracy of graduations or notches upto the total capacity.

(c) All loose proportional weights, where these are provided, shall be tested and then suitably sealed to prevent tampering.

(d) With one quarter of the maximum load (or as near thereto as practicable) placed in the middle or at any of the corners of the platform, the weighbridge shall indicate the same weight within half the limits of error prescribed in Table 2 in col. 3 for non-dial type machines and in col. 4 for dial type machines.

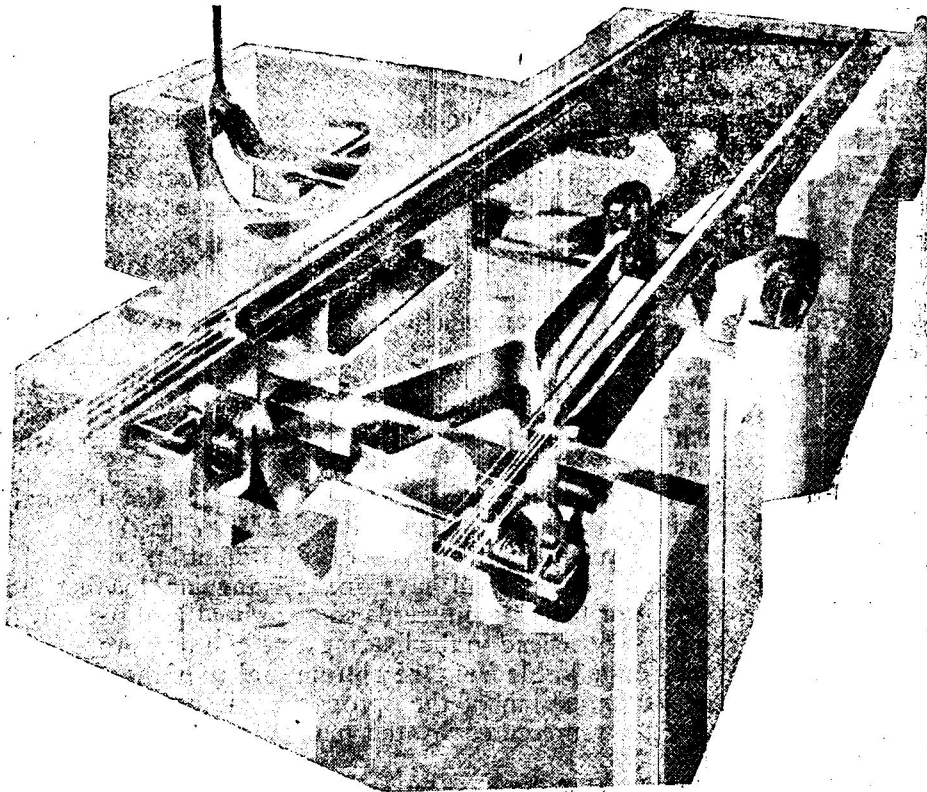


Fig. 1—Weighbridge

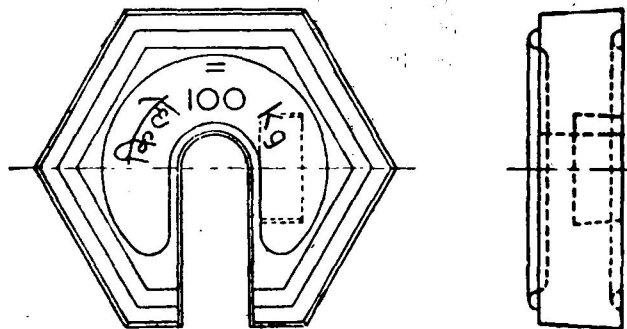


Fig. 2—Proportional Weight

TABLE 1—RANGE OF BALANCING ARRANGEMENT

| Capacity | Range of Balancing Arrangement | |
|----------|----------------------------------|---|
| | Maximum 0.5 per cent of capacity | Minimum 0.125 per cent of capacity each way |
| 1 | 2 | 3 |
| | kg | kg |
| 1 t | 5 | 1.25 |
| 2 t | 10 | 2.50 |
| 3 t | 15 | 3.75 |
| 5 t | 25 | 6.2 |
| 10 t | 50 | 12.5 |
| 15 t | 75 | 19.0 |
| 20 t | 100 | 25.0 |
| 25 t | 125 | 31.0 |
| 30 t | 150 | 35.5 |
| 40 t | 200 | 50.0 |
| 50 t | 250 | 62.0 |
| 60 t | 300 | 75.0 |
| 80 t | 400 | 100.0 |
| 100 t | 500 | 125 |
| 150 t | 750 | 188 |
| 200 t | 1000 | 250 |
| 300 t | 1500 | 375 |
| 400 t | 2000 | 500 |

(e) Weighbridges with steelyard arrangement shall be tested for sensitiveness and error at full load or as near to it as practicable. The sensitiveness and permissible error shall not exceed the limits prescribed in cols. 2 and 3 respectively of Table 2.

(i) The machines shall be tested at loads corresponding to all major divisions or notches.

(ii) With the exception of sensitiveness test, the other tests mentioned above shall be carried out in a similar manner on dial type machines also. These machines shall comply with the requirements prescribed in col. 4 of Table 2.

TABLE 2—SENSITIVENESS AND ERRORS FOR WEIGHBRIDGES

| Capacity of Machine | Verification | | | Inspection | | |
|---------------------|---------------------------------|--|----------------------------|---------------------------------|---|----------------------------|
| | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded for | | Sensitiveness when fully loaded | Greatest error allowed in excess or in deficiency when fully loaded for | |
| | | Non-dial type machines | Machines fitted with dials | | Non-dial type machines | Machines fitted with dials |
| | kg | kg | | kg | kg | |
| 1 t | 1.1 | 1.2 | A weight | 3.3 | 2.4 | A weight |
| 2 t | 1.2 | 1.4 | correspon- | 3.6 | 2.8 | correspon- |
| 3 t | 1.3 | 1.6 | ding to one | 3.9 | 3.2 | ding to |
| 5 t | 1.5 | 2.0 | half the | 4.5 | 4.0 | interval bet- |
| 10 t | 2.0 | 3.0 | interval | 6.0 | 6.0 | ween conse- |
| 15 t | 2.5 | 4.0 | between | 7.5 | 8.0 | cutive gra- |
| 20 t | 3.0 | 5.0 | consecutive | 9.0 | 10.0 | duations. |
| 25 t | 3.5 | 6.0 | graduations. | 10.5 | 12.0 | |
| 30 t | 4.0 | 7.0 | | 12.0 | 14.0 | |
| 40 t | 5.0 | 7.0 | | 15.0 | 14.0 | |
| 50 t | 5.2 | 7.8 | | 15.6 | 15.6 | |
| 60 t | 5.5 | 8.5 | | 16.5 | 17.0 | |
| 80 t | 6.0 | 10.0 | | 18.0 | 20.0 | |
| 100 t | 6.5 | 11.5 | | 19.5 | 23.0 | |
| 150 t | 7.8 | 15.2 | | 23.4 | 30.4 | |
| 200 t | 9.8 | 19.0 | | 27.0 | 38.0 | |
| 300 t | 15.0 | 30.0 | | 45.0 | 60.0 | |
| 400 t | 20.0 | 40.0 | | 60.0 | 80.0 | |

6. *Identification of parts.*—Detachable parts which may affect the accuracy of the weighbridge shall be indelibly numbered or marked so as to facilitate identification.

7. *Sealing.*—(a) Dial machines shall be fitted with a soft metal plug for receiving the seal of the verification authority and wherever practicable, this plug shall be passed through the dial and frame. The plug or stud fitted on the dial shall be so supported as to allow no risk of damage to the instrument.

(b) On weighbridges other than dial machines, a plug or stud shall be provided in a conspicuous position on the indicating lever or steelyard.

PART VIII—CRANE WEIGHING MACHINES

1. *Definition.*—A crane weighing machine is a weighing instrument designed on lever or spring principle specially constructed for suspension from the hook of a crane and fitted with a hook for lifting the load.

Note.—A lever type machine with open steelyard is illustrated in Fig. 1, Fig. 2 illustrates a dial type machine.

2. *Capacities.*—Crane weighing machines may be of the following capacities:

500 kg, 1 tonne, 2 tonnes, 3 tonnes, 5 tonnes, 10 tonnes, 15 tonnes, 20 tonnes, 30 tonnes, 50 tonnes, 100 tonnes and 200 tonnes.

3. *General requirement.*—(a) In addition, to the general requirements in part 1 of the schedule, crane weighing machines shall comply with the following requirements:—

- (i) The machine shall be sufficiently strong to withstand wear and tear in the exacting conditions under which it works.
- (ii) No crane weighing machine shall become a permanent link in the lifting gear.
- (iii) All working parts in a crane weighing machine shall as far as possible, be suitably protected from the dust and damp of the atmosphere. In a lever type machine, the steelyard shall be made of corrosion-resistant steel to withstand atmospheric influence and shall be sufficiently rigid and accurate.
- (iv) In dial type machines, the racks and pinions shall be of suitable hard wearing material and finished smooth.
- (v) The range of balancing or adjusting arrangement shall not exceed 2 per cent of the capacity of the machine (See Table 3).
- (vi) In a steelyard type machine, there shall be free movement of the steelyard. In a dial type machine, the dial indicator shall work freely and return to its initial starting point after the load is removed.
- (vii) In the case of a crane weighing machine provided with hooks, trays or slings, these shall form essential parts without which it is not possible to balance the machine. These shall be identified with the machine.
- (viii) The value of the smallest graduation on dials or minor steelyards and, wherever possible, major steelyard shall be 1g, 2g, 5g or any multiples of 10 or a power of 10 (for instance 100, 1000 etc.) of any of these weights.
- (ix) The total capacity of the machines shall include the capacity of graduated tare bar or bars wherever provided.

Note.—When tare bars are used and are not graduated except with a zero mark only, they shall not be taken into account when calculating the capacity of the machines. Ungraduated tare bars shall be marked with zero.

4. *Tests.*—(a) Crane machines of the steelyard type shall be tested for sensitiveness and greatest error at full load and shall comply with the requirements of Table 1.

(b) Crane machines of the dial type shall be tested for greatest error at full load and shall comply with the requirements of Table 2.

(c) Spring type crane machines shall not be tested for sensitiveness.

(d) For spring type machines, the limits of greatest error shall be double of those prescribed for steelyard machines (See Table 1).

(e) Each numbered graduation shall be tested and the instrument shall be correct whether the test is carried out with increasing or decreasing loads.

(f) The intermediate graduations shall also be tested to see that they are correct and are at proper distance apart.

(g) No test for sensitiveness at a load lower than the full load shall be made.

5. *Sealing.*—Crane machines shall be fitted with a irremovable plug in a conspicuous part, either on the steelyard or on the dial to receive the seal of the verification authority.

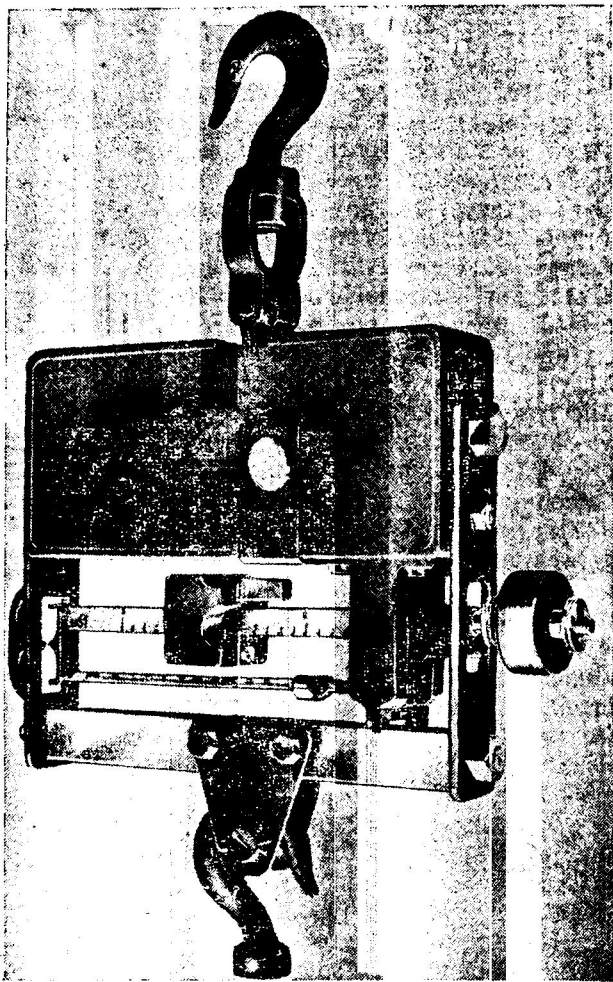


Fig. 1—Crane Weighing Machine, Steelyard Type

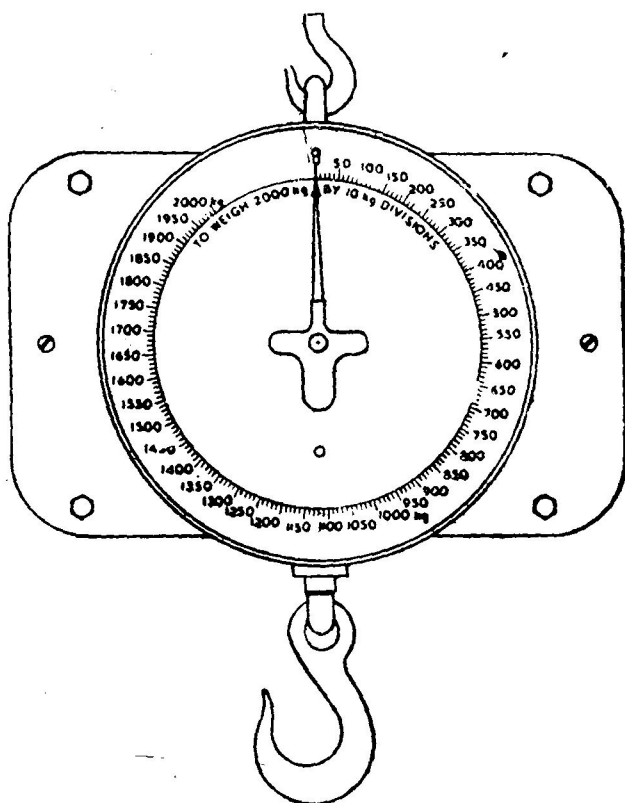


Fig. 2—Crane Weighing Machine, Dial Type

TABLE 1—LIMITS FOR SENSITIVENESS AND GREATEST ERRORS FOR CRANE WEIGHING MACHINES—STEELYARD TYPE

| Capacity | Verification | | Inspection | |
|----------|---------------------------------|--|---------------------------------|--|
| | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded | Sensitiveness when fully loaded | Greatest error allowed in excess or deficiency when fully loaded |
| 1 | 2 | 3 | 4 | 5 |
| 500 kg | 100 g | 200 g | 300 g | 400 g |
| 1 t | 1.1 kg | 1.2 kg | 3.3 kg | 2.4 kg |
| 2 t | 1.2 kg | 1.4 kg | 3.6 kg | 2.8 kg |

| 1 | 2 | 3 | 4 | 5 |
|-------|--------|---------|---------|---------|
| 3 t | 1.2 kg | 1.6 kg | 3.9 kg | 3.2 kg |
| 5 t | 1.5 kg | 2.0 kg | 4.5 kg | 4.0 kg |
| 10 t | 2.0 kg | 3.0 kg | 6.0 kg | 6.0 kg |
| 15 t | 2.5 kg | 4.0 kg | 7.5 kg | 8.0 kg |
| 20 t | 3.0 kg | 5.0 kg | 9.0 kg | 10.0 kg |
| 30 t | 4.0 kg | 7.0 kg | 12.0 kg | 14.0 kg |
| 50 t | 5.2 kg | 7.8 kg | 15.6 kg | 15.6 kg |
| 100 t | 6.5 kg | 11.5 kg | 19.5 kg | 23.0 kg |
| 200 t | 9.0 kg | 19.0 kg | 27.0 kg | 38.0 kg |

TABLE 2—LIMITS FOR GREATEST ERROR FOR CRANE WEIGHING MACHINES DIAL TYPE

| Capacity | Minimum weights corresponding to interval between successive graduations | Greatest error allowed in excess or deficiency when fully loaded | |
|----------|--|---|--|
| | | Verification | Inspection |
| 1 | 2 | 3 | 4 |
| 500 kg | 5 kg | A weight corresponding to half the interval between successive graduations. | A weight corresponding to the interval between successive graduations. |
| 1 t | 5 kg | | |
| 2 t | 5 kg | | |
| 3 t | 10 kg | | |
| 5 t | 25 kg | | |
| 10 t | 50 kg | | |
| 15 t | 50 kg | | |
| 20 t | 100 kg | | |
| 30 t | 100 kg | | |
| 50 t | 250 kg | | |
| 100 t | 500 kg | | |
| 200 t | 500 kg | | |

TABLE 3—RANGE OF BALANCING ARRANGEMENT

| Capacity | Range of balancing arrangement |
|----------|--------------------------------|
| 500 kg | 10 kg |
| 1 t | 20 kg |
| 2 t | 40 kg |
| 3 t | 60 kg |
| 5 t | 100 kg |
| 10 t | 200 kg |
| 15 t | 300 kg |
| 20 t | 400 kg |
| 30 t | 600 kg |
| 50 t | 1000 kg |
| 100 t | 2000 kg |
| 200 t | 4000 kg |

PART IX—AUTOMATIC WEIGHING MACHINES

1. *Definition.*—An automatic weighing machine may be defined as any weighing scale which has an integral mechanism for automatically admitting and discharging a load, and may be fitted with an apparatus for counting or otherwise recording the number of loads handled.

2. *Capacities.*—Automatic machines shall be of the capacities as agreed upon between the purchaser and the seller.

3. *Design and Construction.*—(a) Automatic weighing machines and their integral parts, shall be identified with the machines, by an indelible number or other mark of identification.

(b) The adjusting mechanism shall be suitably secured or constructed so that it cannot be tampered with.

(c) The capacity of the automatic weighing machine shall be marked legibly on a conspicuous part of the machine.

4. *Tests.*—(a) Automatic machines shall be tested for errors according to the requirements of Table 1.

(b) The accuracy of the output of the machine shall be verified by re-weighing in another weighing instrument not less than 20 continuous loads, or where practicable, the machine may be tested directly by the application of standard weights.

(c) In testing totalising machines, not less than 50 loads shall be passed over the machine, namely, 10 minimum loads, 10 maximum loads and 30 loads of the mean between the minimum and maximum.

5. *Sealing.*—Automatic machines shall be fitted with a plug on the beam, shank or dial of the machine to receive the seal.

TABLE 1—PERMISSIBLE ERRORS FOR AUTOMATIC MACHINES

| Use | Capacity | Error (Verification or Inspection) |
|---|--------------------|---|
| Weighing small loads of tea, coffee etc. | 20 g and upwards | 0.5 per cent of the load in excess only. |
| Weighing grain etc. | 5 kg and upwards | 0.25 per cent of the load, in excess of or deficiency. |
| Weighing coal etc. | 50 kg and upwards | 0.5 per cent of the load in excess or deficiency. |
| | | { The allowances in these cases are subject to the proviso that the error tolerated shall not exceed the weight represented by half a minimum division marked on the dial or steelyard. |
| 'Totalising' machines used for weighing coal etc. | 500 kg and upwards | |
| | | 0.5 per cent of the total load of 50 weighings in excess or deficiency. |

PART X—SELF INDICATING AND SEMI-SELF-INDICATING COUNTER TYPE WEIGHING MACHINES

1. *Definition.*—(a) *Self-Indicating Machine.*—A machine which on the application of the load to be weighed, indicates the whole of the load automatically. A typical self-indicating machine is illustrated in Fig. 1.

(b) *Semi-Self-Indicating Machine.*—A machine which, on the application of the load to be weighed, indicates automatically only a portion of the weight of the whole load leaving the remainder to be balanced by weight or sliding poises fitted to the tare or capacity bars or by any other suitable means. A typical semi-self-indicating machine is illustrated in Fig. 2.

2. *Capacities.*—The self-indicating or semi-self-indicating machines may be of the capacities shown in Table 1.

3. *General requirements.*—(a) Self-indicating or semi-self-indicating machines are generally constructed by incorporating a beam or levers coupled to a pendulum or other type of resistance system, excluding springs, so as to produce an indicating arrangement for the machine. The arrangement of the lever system of machine shall be such that the horizontality of the goods and weight pan fittings throughout the movement of the beam is preserved. The machine shall be provided with dash pot or any other suitable arrangement so as to bring the pointer quickly to rest.

(b) The supports for the pans shall be of a suitable rigid structure. The pans shall be made of mild steel, stainless steel, brass or bronze, aluminium or its alloys, porcelain, enamel coated steel, glass or plastic materials.

(c) The bearing surfaces, knife edges and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife edges and bearings shall be so fitted as to allow the beam to move freely and the knife edges shall rest on their bearings at practically their entire length. All levers and resistance mechanism shall be enclosed as far as possible.

(d) The machines shall have a balance box for minor adjustments. The balance box shall be permanently fixed, preferably beneath the weight pan and shall be large enough to contain loose material to an amount upto one per cent of the capacity of the machine. No other adjusting contrivance shall be used. In case of self-indicating machines, the balance box shall be fixed below the goods pan.

(e) The chart of the machines shall be graduated into equal parts and the width apart of the graduations shall be not less than 1.5 mm (unless magnification is provided on the chart) for a capacity of 10 kg and under, and not less than 2mm for a capacity above 10 kg. The weights corresponding to one half the interval between consecutive graduation marks shall not exceed the greatest error allowed as shown in Table 1. The extremity of the pointer shall not exceed one millimetre in width and shall not be more than 3mm away from the chart. The position of the index when there is no load shall be clearly indicated by zero mark.

(f) The value of the minor graduation on the chart shall correspond to one of the weights in the series, 1 g, 2 g, 5 g, or its decimal multiples of 10 or of powers of 10.

(g) The self-indicating and semi-self-indicating machines, excepting out of level-scales, shall be provided with levelling screws and a circular bubble.

(h) When tare bars are graduated, they shall only be permitted, provided the chart capacity (Chart plus tare bar) comply with capacities shown in Table 1.

Note.—When tare bars are used and are not graduated except with a zero mark, they shall not be taken into account when calculating the

capacity of the machine. Ungraduated tare bars shall be marked with zero.

4. *Tests.*—(a) All self-indicating and semi-self-indicating machines shall be tested on a horizontal level plane.

(b) The machines shall be tested throughout the full range of their capacity by progressively increasing the load, the permissible error shall not exceed the limits specified in Table 1.

(c) When the pans are loaded to half the capacity there shall be no appreciable difference in the weight indicated on the dial when the load is moved within a distance from centre equal to one-third from the greatest length of the pan.

(d) When the goods pan is in the form of a scoop, the machine shall be correct to the prescribed limits of error if half the full load is placed against

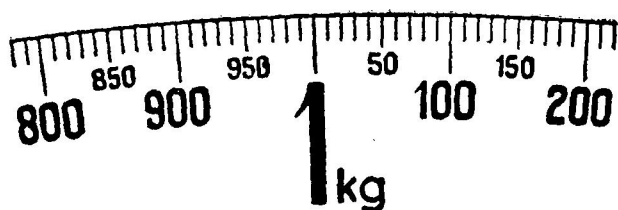
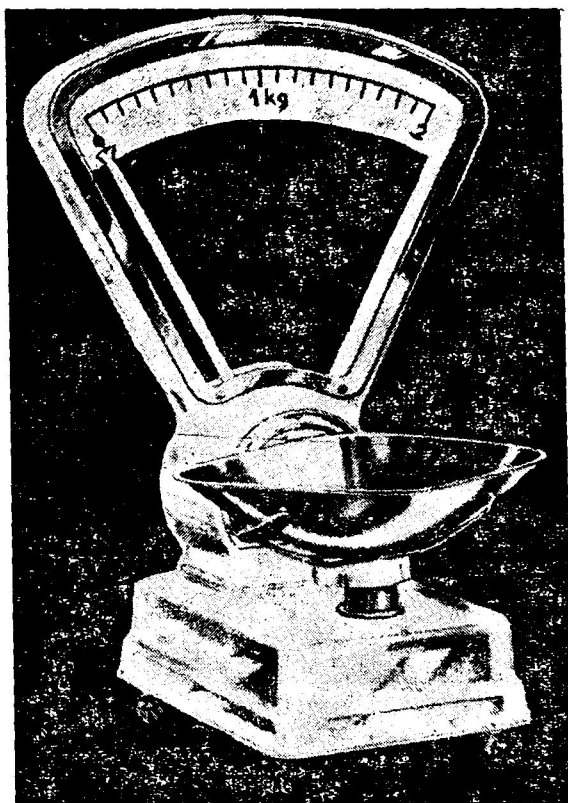


Fig. 1—Self-Indicating Machine

the middle of the back of the scoop and the other half in any position on the scoop.

(e) Self-indicating and semi-self-indicating machines shall not be tested for sensitiveness.

5. *Sealing.*—(a) Each machine shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or by some other suitable manner.

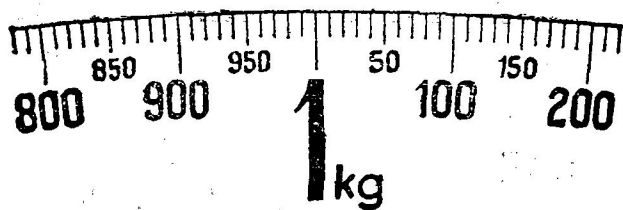


Fig. 2—Semi-Self-Indicating Machine

TABLE 1—LIMITS FOR GREATEST ERROR FOR SELF-INDICATING
AND SEMI-SELF-INDICATING COUNTER TYPE
WEIGHING MACHINE

| Capacity | Max. value of the minor graduation | Greatest error allowed in excess or in deficiency when fully loaded | |
|--|--|--|------------|
| | | Verification | Inspection |
| 1 | 2 | 3 | 4 |
| <i>(a) Self-indicating Machines</i> | | | |
| 100 kg | 200 g | 100 g | 200 g |
| 50 kg | 100 g | 50 g | 100 g |
| 30 kg | 100 g | 50 g | 100 g |
| 20 kg | 100 g | 50 g | 100 g |
| 10 kg | 50 g | 25 g | 50 g |
| 5 kg | 20 g | 10 g | 20 g |
| 3 kg | 10 g | 5 g | 10 g |
| 2 kg | 10 g | 5 g | 10 g |
| 1 kg | 10 g | 5 g | 10 g |
| 500 g | 5 g | 2.5 g | 5 g |
| 200 g | 2 g | 1.0 g | 2 g |
| 100 g | 1 g | 0.5 g | 1 g |
| <i>(b) Semi-self-indicating Machines</i> | | | |
| 100 kg | 100 g | 50 g | 100 g |
| 50 kg | 40 g | 20 g | 40 g |
| 30 kg | 30 g | 15 g | 30 g |
| 20 kg | 20 g | 10 g | 20 g |
| 10 kg | 10 g | 5 g | 10 g |
| 5 kg | 10 g | 5 g | 10 g |
| 3 kg | 10 g | 5 g | 10 g |
| 2 kg | 10 g | 5 g | 10 g |
| 1 kg | 10 g | 5 g | 10 g |
| 500 g | 4 g | 2 g | 4 g |
| 200 g | 2 g | 1 g | 2 g |
| 100 g | 1 g | 0.5 g | 1 g |

Note.—The maximum error shall not exceed the value of half the minor division indicated on the chart.

PART XI—PERSON WEIGHING MACHINES

1. *Definition.*—(a) A person weighing machine means an instrument with compound levers and with a platform to receive the person to be weighed. The weight of the person is indicated with a steelyard or any other form of indicator or by a ticket printing device.

(b) Person weighing machine of steelyard, dial and ticket printing types are illustrated in Fig. 1, 2 and 3 respectively. These drawings are illustrative only and do not specify any particular design.

2. *Capacity.*—The person weighing machine shall have a capacity not less than 120 kg.

3. *General requirements.*—(a) *Platform.*—The maximum size of the platform shall be 400×350 mm. The platform shall not extend beyond the frame on any side.

(b) *Steelyard Type Machine.*—(i) The steelyard shall not have any readily removable parts except the support for proportional weights. The minimum travel of a steelyard shall be 10 mm either way.

(ii) The top and bottom of the guide and/or steelyard shall be fitted with non-magnetic material, if these are made of ferrous material.

(iii) When the steelyard is provided with notches, the latter shall be suitably protected.

(iv) The value of the smallest division on the steelyard shall be graduated with 5 kg×50 g divisions.

(v) *Balancing arrangement.*—Where a balancing device is provided on the steelyard, the balance ball shall not be easily accessible. The balancing arrangement for daily wear and tear shall have a range not exceeding 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way. The balancing device containing the balancing ball shall be securely attached to the steelyard. The balancing ball shall be actuated by knurled headed bolt passing through it.

(c) *Dial Type Machines.*—(i) Racks and pinions shall be of suitable hard wearing material and shall be finished smooth.

(ii) The extremity of the pointer shall in no position be at greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but not to obscure the graduation marks.

(iii) The dial shall be graduated into equal parts and the minimum width apart of the graduations shall not be less than 1.5 mm. The minimum graduation shall be 500 g.

(d) *Ticket Printing Type Machines.*—(i) Racks and pinions shall be of suitable hard wearing material and shall be finished smooth.

(ii) The weight shall be legibly indicated on the ticket.

4. *Proportional Weights.*—(a) All loose proportional weights shall be identified with the machine by a number or any other suitable mark of identification which shall be indelible. The counterpoise weights shall be marked with their equivalent weights in the following manner:

किलो 5 kg

(b) Proportional weights shall be hexagonal in shape with a slot of suitable size to allow them being place on the counter balance.

(c) The proportional weights shall be made of cast iron or brass.

(d) The proportional weights shall have one rectangular loading hole which shall be undercut or tapering outside so as to hold lead securely for adjustments. The undercut hole shall be of reasonable size so as to accommodate the lead required for adjustments. The surface of the lead in the loading hole shall not be less than 2 mm inside from the bottom surface of the weight.

(e) The steelyard type person weighing machine shall be provided with suitable proportional weights. The denominations of proportional weights shall be 1 kg, 2 kg, 5 kg or a multiple or sub-multiple by 10 or a power of 10 (100, 1000 etc.). The total value of the proportional weights shall not exceed the capacity of the machine. For the purpose of calculating total capacity the graduation on the steelyard shall not be taken into account.

5. *Tests.*—(a) The steelyard of the person weighing machine with steelyard arrangement; shall remain horizontal at no load on the platform.

(b) With load weighing one-quarter of the maximum capacity of the machine or as near thereto as is practicable, the weighing machine shall

indicate the same weight within half the prescribed limits of error whether the load is placed in the centre or on any of the four corners of the platform.

(c) The machine shall be tested to verify the accuracy of graduations upto the total capacity.

(d) Person weighing machines with the steelyard arrangement shall be tested for error as well as for sensitiveness at full load. The permissible errors and sensitiveness are given in Table 1.

(e) Person weighing machines provided with dial type indicator or ticket printing device shall be tested for errors only. No sensitiveness test shall be taken on such machines. The permissible error at any load shall not exceed the limits prescribed in Table 1.

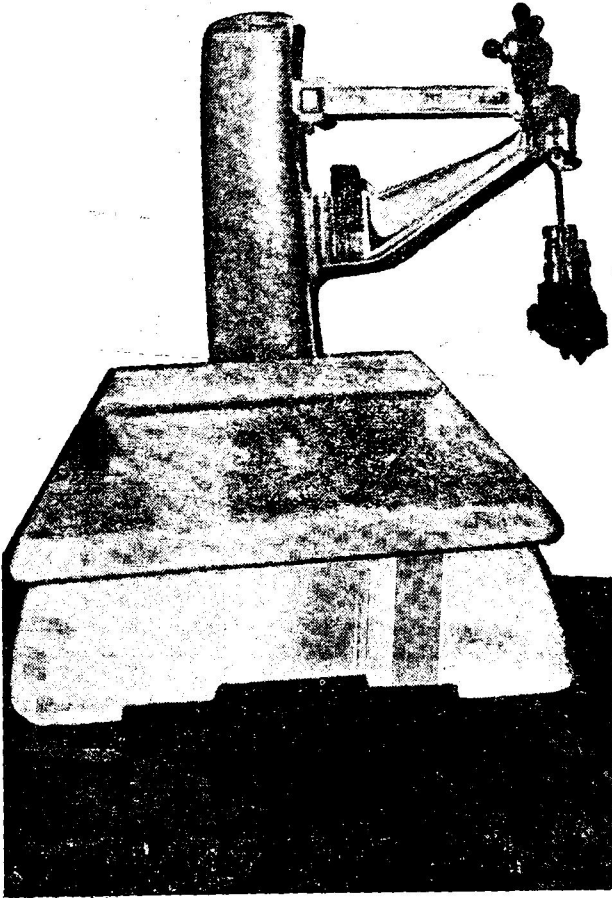


Fig. 1—Person Weighing Machine, Steelyard Type

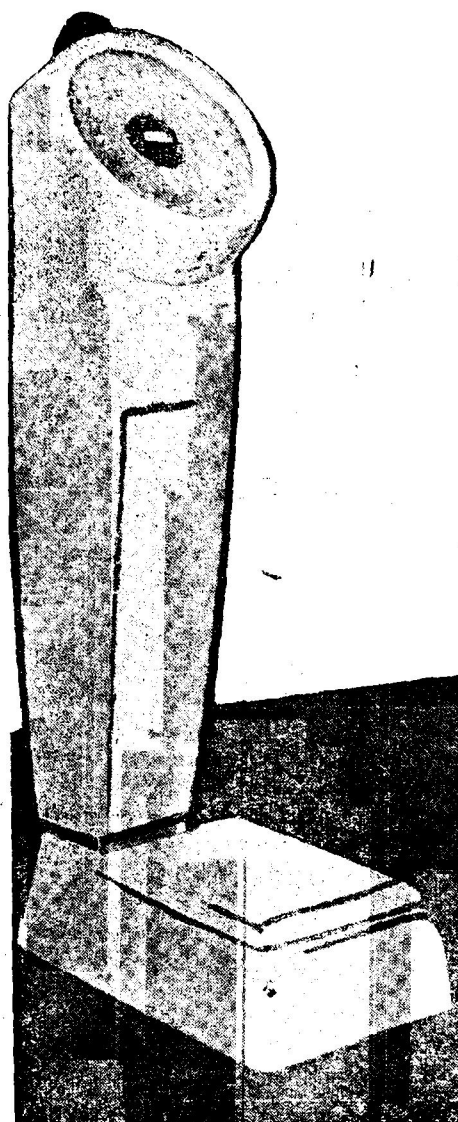


Fig. 2—Person Weighing Machine, Dial Type

TABLE 1—LIMITS FOR GREATEST ERROR FOR PERSON WEIGHING MACHINES

| Type of Machine | Sensitiveness when fully loaded | Greatest error allowed in excess or in deficiency when fully loaded | |
|------------------------|---------------------------------------|---|------------|
| | | Verification | Inspection |
| 1. Steelyard | 25 g | 50 g | 100 g |
| 2. Dial Type | — | 250 g | 500 g |
| 3. Ticket Issuing Type | — | 500 g | 1 kg |

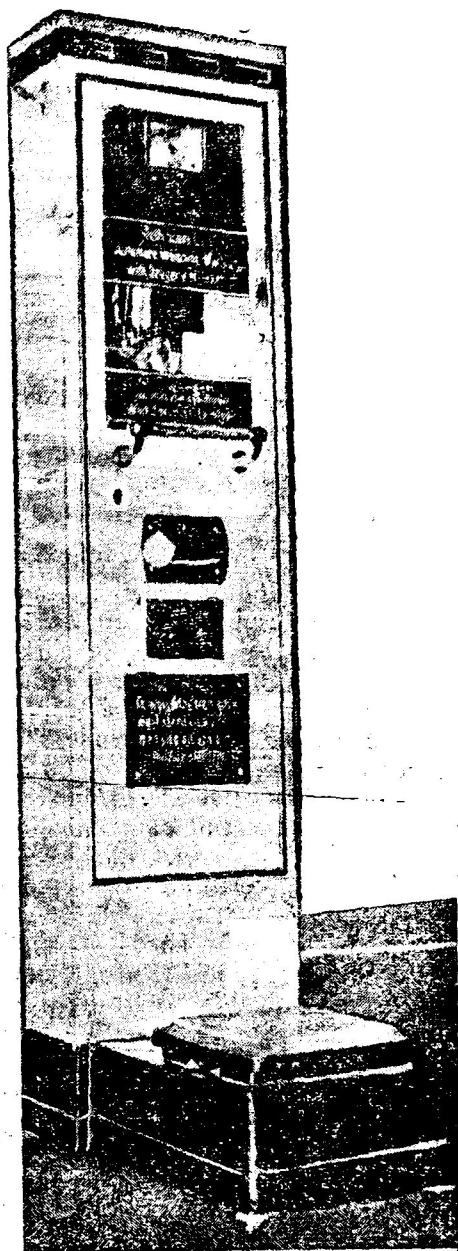


Fig. 3—Person Weighing Machine “Ticket Printing Type”

SPECIFICATIONS FOR COMMERCIAL MEASURING INSTRUMENTS

After schedule VI the following new schedule to be renumbered as Schedule VII shall be added, and the existing schedules VII and VIII shall be renumbered as schedule VIII and schedule IX:—

SCHEDULE VII—SPECIFICATIONS FOR COMMERCIAL MEASURING INSTRUMENTS

PART I—GENERAL REQUIREMENTS

1. *Definitions.*—(a) A measuring instrument is a mechanism or machine designed to measure and/or deliver liquid products by volume.

The expression “correct” means correct within the limits of errors prescribed in these rules.

2. Measuring instruments of the following categories are included into these specifications:

(a) Dispensing pumps.

(b) Meters used for the measurement of quantities of oil and/or liquids flowing through pipelines or in package filling or deliveries to and from oil tanks, wagons, road vehicles, aviation refuellers etc.

(c) Volumetric container filling machines.

3. *General requirements.*—(a) All commercial measuring instruments viz., dispensing pumps, meters and volumetric filling machines shall be conspicuously, clearly and prominently marked for the purpose of identification, with the name, initials or registered trade mark of the manufacturer.

(b) The manufacturer's name or the registered trade mark shall be such as will not be mistaken for the stamp or seal of the Inspector.

(c) Every volumetric container filling machine shall have the capacity of the container prominently and indelibly marked on it.

(d) The mechanism or devices attached thereto or used in connection therewith shall be so constructed, assembled or installed as to minimise the possibility of fraudulent practices.

(e) All graduations indicating quantities delivered shall be clearly and indelibly marked.

(f) Every measuring instrument of a fixed type shall be so disposed that the purchaser has a clear and unobstructed view of the quantity indicated.

(g) No measuring instrument shall be so arranged as to deliver measured quantities at more than one outlet.

(h) Every graduated scale or other indicating device of the measuring instrument shall be numerical sequence, reading in one direction only.

4. *Tests.*—(a) All measuring instruments shall be tested under normal operating conditions.

(b) The measuring instrument shall not be stamped unless it is complete with all parts and attachments concerned with the operation of measurement and/or delivery.

(c) The measuring instrument shall be provided with one or more plugs and suitable means of sealing them to prevent tampering with stops or other adjustable parts affecting the quantity delivered. Seals shall be provided by the makers or users of the machines for Inspector's stamp.

(d) Measuring instruments which are not portable as well as portable measuring instruments of the types the Superintendent may specify in this behalf, shall be verified and stamped *in situ*, in addition to any preliminary test in the manufacturer's or dealer's premises. Such a preliminary test shall be made at the request of the manufacturer or dealer.

PART II—DISPENSING PUMPS

1. *Definitions.*—(a) A dispensing pump is a measuring instrument used in conjunction with a storage tank or tanks for effecting deliveries of liquid products by specified volumes.

(b) *Wet Hose System.*—A type of device designed to be operated with the discharge hose full of liquid at all times. A 'Wet Hose' is the discharge hose in this type of device.

(c) *Dry-Hose System.*—A type of device in which the discharge hose is completely drained following each delivery. A 'Dry Hose' is the discharge hose in this type of device.

2. *Types.*—(a) Dispensing pumps shall be either of the meter type or container type.

3. *General requirements.* (a) A dispensing pump shall essentially consist of:—

- (i) suitable casing or housing,
- (ii) pumping unit,
- (iii) metering unit or volumetric container,
- (iv) register for quantities, and
- (v) flexible hose with nozzle.

4. Every dispensing pump shall be provided with an individual sales indicator, graduated to indicate all possible deliveries. Any other counting on totalising device that may be provided, shall be so arranged as to avoid any possibility of confusion with the individual sales indicator.

5. A dispensing pump of meter type shall be so constructed that, after a particular delivery cycle has been completed by movement of the starting lever to its shut-off position, an effective automatic interlock shall prevent a subsequent delivery being started until the indicating elements have been returned to their correct zero position.

6. A dispensing pump of container type shall be so constructed that the individual sales indicator shall register only when the discharge from each container has commenced. A notice shall be prominently exhibited on the pump panel to indicate clearly and prominently the following:

'PLEASE ENSURE BEFORE STARTING DELIVERY'

- (i) Sales indicator is set at zero.
- (ii) Container is full.

7. Dispensing pumps of container type shall be provided with observation windows or other means for showing clearly that the container or containers are properly charged and discharged.

8. Dispensing pumps delivering the liquid under pressure shall work on the 'wet hose' system, fitted with a nozzle having combination control valve and automatic pressure discharge valve which should operate under the pressure at which the pump is designed to deliver.

9. Dispensing pumps delivering liquid under gravity shall work on the 'dry hose' system. The 'dry hose' shall be of such length and stiffness as to facilitate complete and rapid drainage of the hose pipe and shall be provided with a nozzle without any valve.

10. The length of the discharge hose on a dispensing pump shall not exceed 5 metres from the outside of the housing of the pump to the inlet end of the discharge nozzle.

11. A dispensing pump of the meter type shall have an effective air eliminator unit situated after the pumping unit and immediately preceding the metering unit.

12. A dispensing pump of the container type shall have a suitable air vent to preclude the possibilities of air-trap in the volumetric container.

13. *Tests.*—(a) All dispensing pumps shall be tested for accuracy of discharge as described hereunder.

(b) A dispensing pump shall be tested under practical working conditions with the liquid that the instrument is intended to deliver.

(c) All dispensing pumps shall be verified by check measures. The check measures may be of the denominations 1, 5, 10 and 20 litres.

(d) Every check measure shall be verified against the appropriate working standard measure at least once in every period of six months and duly sealed.

(e) Before commencing checking of dispensing pump, the pump shall be run for a few minutes to ensure that all the units are functioning smoothly and also the discharge hose has been wetted.

(f) A dispensing pump before being tested for accuracy shall be tested for leakage by being first fully primed.

14. The procedure for testing a dispensing pump shall be as follows:

(a) The standard check measure shall first be filled to wet the entire inside surface. It shall then be emptied.

(b) The pointer (meter type) or reading (container type) of the recording mechanism shall then be set to zero.

(c) The pump shall be operated to dispense the liquid in the standard check measure until the pointer (meter type) is at zero position again or the reading (container type) records the capacity of the check measure.

(d) If the quantity of liquid delivered is in error beyond the permissible limits, the instrument shall be adjusted so that it delivers quantity within permissible limits of error.

(e) Steps (b), (c) or (d) shall be repeated until the pump gives two consecutive deliveries within permissible limits of error.

(f) If the instrument has been found to give correct measure in the initial test itself, further test of accuracy shall be made and recorded.

15. Every dispensing pump shall deliver correctly at reasonable uniform speed which shall be not less than 10 litres per minute.

16. The permissible limits of error are specified below:

| Quantity | Verification | Inspection | |
|-----------|------------------|--------------------------|------------------|
| | Errors in excess | Error Excess | Error Deficiency |
| 1 | 2 | 3 | 4 |
| 20 litres | 100 ml | Same as on verification. | 50 ml |
| 10 litres | 50 ml | | 25 ml |
| 5 litres | 30 ml | | 15 ml |
| 1 litre | 10 ml | | 5 ml |

No error in deficiency shall be permitted during verification.

17. *Sealing and Stamping*.—After adjustment for correct delivery, lead and wire seals shall be applied in such manner that no further adjustment can be made, without mutilating the seal or seals. Plain wire shall not be used for lead and wire seal or seals. Inspector's stamp on the lead seal or seals shall be affixed by means of a plier. Inspector's stamp shall also be marked on the name-plate fixed on the dispensing pump.

18. A name plate to be fixed on the petrol pump for identification shall be of the shape and design shown below:

| | | | |
|--|------------------|------|-------|
| Rajasthan Weights and Measures (Enforcement) Act, 1958 as extended to the Union territory of Himachal Pradesh. | | | |
| Name of the owner of the pump and pump No. | | | |
| Capacity of | Petrol H.S.D. | Pump | Litre |
| * | | | |
| | | | |
| | | | |

*Columns for Inspector's stamps.

19. *Capacity*.—The capacity of a dispensing pump of meter type shall be the maximum graduation on the dial or register.

The capacity of dispensing pump of container type shall be the capacity of the container or where there is more than one container the aggregate capacity of the containers.

SCHEDULE VIII (AS RENUMBERED) ABBREVIATIONS OF DENOMINATIONS

1. Under item 6 (Area) against, 'Square centimetre' and 'Square millimetre', under column 'abbreviation' 'cm²' and 'mm²' shall be substituted for 'cm²²' and 'mm' respectively.

2. A new item shall be added after item 6, as follows:—

| | | |
|-----------------------|--------------------|----|
| '7 Land Measures' are | 100 m ² | a |
| hectare | 100 a | ha |
| centiare | m ² | ca |

3. The following new sentence shall be added after the words occurring in the end at asterisk mark*—

'The former abbreviation is used internationally'.

4. The note at the end of this schedule, shall be replaced by the following:

RULES FOR ABBREVIATIONS

(1) Do not make any change, such as addition of 's' to indicate plurality e.g., write 1 kg, 10 kg, 20 g, 5 g, 10 t, 20 ml, 27 t, 165 km, 2 mm, 100 cm³, 66 km².

(2) Do not capitalize the abbreviations. For example, do not write 1 Kg, 2 Kg, 20 MM, 50 MM, the right way is 1 kg, 2 kg, 20 mm, 50 mm, etc.

(3) Do not use any other abbreviations except those given above.

SCHEDULE IX (AS RENUMBERED)

CERTIFICATE OF VERIFICATION

1. At the bottom of the certificate the words, 'T Receipt' shall be read as 'Treasury Receipt'.

2. In the certificate, the words 'the above Act' by shall be substituted by the words 'the Rajasthan Weights and Measures (Enforcement) Act, 1958, as extended to the Union territory of Himachal Pradesh'.

3. The following note shall be inserted at the end of the certificate:—

Note.—This certificate of verification shall be exhibited in a conspicuous place in the premises where the weights, measures or weighing or measuring instruments to which it relates, are used. In case of a hawker this certificate shall be kept on his person.

SCHEDULE X (AS RENUMBERED)

After schedule IX (as renumbered) the following new schedule to be numbered as schedule X shall be added and the existing schedules IX, X, XI, XII and XIII shall respectively be renumbered as schedules XI, XII, XIII, XIV, and XV:—

SCHEDULE X

MAXIMUM PERMISSIBLE ERRORS IN NET WEIGHT OR MEASURE OF PACKED COMMODITIES

| | <i>Permissible error</i> |
|---|---------------------------------------|
| (1) <i>Raw Cotton:</i> | |
| Packed in standard bales of 180 kg. | + 5 kg |
| (2) <i>Cotton Yarn:</i> | |
| Full bale of 180 kg | + 5 kg |
| 3/4 bale of 135 kg | + 3.75 kg |
| 1/2 bale of 90 kg | + 2.50 kg |
| 1/4 bale of 45 kg | + 1.25 kg |
| (3) <i>Cement:</i> | |
| At factory | + 2 per cent |
| In retail trade | + 3 per cent |
| (4) <i>Tea:</i> | |
| Retail packages of 500 g, 250 g, and 100 g. | + 1 per cent at the place of packing. |
| Chests packed at places other than tea gardens. | + 1 per cent at the place of packing. |
| The net weight of packages or chests of tea shall be verified only at the place of packing. | |
| (5) <i>Jute Cloth:</i> | |
| Length of jute cloth | + 0.5 per cent |
| (6) <i>Paint:</i> | + 1 per cent. |

| | |
|--|---|
| (7) <i>Beer and Spirits filled in Bottles:</i> | <i>Permissible error</i> |
| Beer | (—) 2.0 per cent |
| Spirits | (—) 2.0 per cent, subject to a maximum of (—) 7.5 ml. |

The net measure of beer or spirits in bottles shall be verified only at the place where they are bottled.

SCHEDULE XI (AS RENUMBERED)

PROCEDURE TO BE FOLLOWED FOR INSPECTION, VERIFICATION AND STAMPING OF COMMERCIAL WEIGHTS AND MEASURES AND WEIGHING AND MEASURING INSTRUMENTS USED OR FOR USE IN TRANSACTIONS

1. In para 3 (b) of Part I, 'Steel tape measure' the figure and letters '5 kg' shall be substituted by '2 kg' for 1m and 2m tapes, and 5 kg for 10 m, 15m, 20m, 30m and 50m tapes.

2. In para 3 (f) of Part I the word 'at' shall be replaced by the words 'attached to'.

3. The following new Part III shall be added after Part II in this schedule :—

PART III—CALIBRATION OF VEHICLE TANKS FOR PETROLEUM PRODUCTS AND OTHER LIQUIDS

1. *Definitions.*—(a) *Vehicle Tank.*—An assembly used for the delivery of liquids comprising a tank which may or may not be sub-divided into compartments, mounted upon a vehicle together with its necessary piping, valves, meters etc.

(b) *Compartment.*—The entire tank, when this is not sub-divided; otherwise, anyone of these sub-divisions of a tank designed to hold liquid.

(c) *Calibration.*—Verification and stamping of the capacity of the vehicle tank.

(d) *Dip Stick.*—A square or a tangular metal bar of brass or any other suitable hard material used to determine the depth of the liquid in the tank.

(e) *Ullage Stick.*—A T-shaped metal bar of brass or other suitable material used to determine the depth of the level of liquid from the top of the dip pipe.

(f) *Ullage Indicator.*—A device bolted to the inside of a manhole neck ring with the indicator set to any desired level to which liquid in the tank is required to be filled.

2. *Testing Medium.*—(a) *Compartment Testing.*—Water or other appropriate liquid shall be used as a testing medium in determining the capacity of a vehicle tank compartment.

(b) *Meter Testing.*—A vehicle tank meter shall be tested with a liquid of the same character or of approximately the same viscosity as the liquid to be commercially measured through the meter.

3. *Equipment and tools.*—The following equipment and tools are required for calibration of vehicle tank:

(a) *Proving Measures.*—When available, shall be checked for accuracy against an appropriate working standard measure.

(b) *Calibrated Bulk Meter.*—An accurate meter fitted with a pre-set valve, air eliminator and strainer, which has been checked for accuracy against an appropriate working standard measure.

(c) A set of standard commercial measures.

(d) Other equipment and tools viz., hose pipes, scribe, punch, try square, tyre pressure gauge, hammer etc.

4. *Calibration Procedure.*—(a) Vehicle tanks used as measures shall be calibrated as capacity measures. In the case of meter equipped tanks, the meter shall be treated as a separate measuring instrument for purpose of calibration.

(b) The compartment capacity or capacities shall be taken as including the capacities of the delivery lines leading from the emergency, safety or master valve of the outlet valve (discharge valve) provided that in the case of vehicle compartments terminating in a single delivery pipe line fitted with an outlet valve, the compartment capacity or capacities shall be taken as excluding the capacity of the delivery pipe line. A notice shall be prominently exhibited on the vehicle tank indicating clearly and indelibly the following:

Marked capacity includes capacity of delivery line,

OR

Marked capacity excludes capacity of delivery line as the case may be.

The safety or master valve shall be positioned at the lowest point of outlet from the compartment.

(c) The proving measure or bulk meter should be mounted on an overhead gantry or a separate framework in a convenient position above a firm and level platform, preferably of concrete on which the vehicle stands during calibration.

(d) The vehicle shall be placed in a level position before commencing calibration as the accuracy of calibration depends on the level of the tank; the sequence in which compartments are calibrated should be such as to minimise unequal spring deflection on the axles of the vehicle.

(e) The front and rear tyres of the vehicle should be at the correct pressures. The tyres should be inspected for wear which should be reasonably even and there should not be excessive difference in wear in the tread between the front set of tyres and the rear set at the time of calibration.

(f) The interior of the compartment should be inspected and cleaned where necessary.

(g) Before starting calibration, the pipelines, outlet valves and other connections shall be tested against leakage by partially filling and draining each compartment in turn through the outlet valve. During the process sufficient quantity of the testing medium should be introduced inside the compartment to wet the internal surface of the tank and pipelines.

(h) After taking the precautions mentioned above, the compartment to be calibrated shall be filled with appropriate proving measures or bulk meters to the marked capacity of the compartment with the delivery lines leading to the outlet valve full or empty as provided in (b) above. The dip/ullage mark shall be taken carefully and the line shall be cut on the dip/ullage stick at right angles to the axis with the help of try-square and scribe. If an ullage indicator is used, it shall be correctly set and sealed.

(i) A mark should also be made on the dip stick to indicate the 'proof line' which is the level of the top surface of the dip pipe. In the case of ullage stick, the distance from the ullage point to the T-joint should be marked on the stick.

(j) Each compartment should be left full before proceeding to the next in sequence.

5. *Permissible Errors.*—(a) Proving measures shall have the following capacities and shall be adjusted within the following permissible errors;—

| Capacity Litres | Permissible error Millilitres |
|--------------------|----------------------------------|
| 50 | 50 |
| 100 | 100 |
| 200 | 200 |
| 500 | 500 |
| 1000 | 1000 |
| 1500 | 1500 |
| 2000 | 2000 |
| 5000 | 5000 |

(b) The maximum error for vehicle tank compartments shall be 0.05 per cent in excess of the marked capacity of the compartments.

6. *Markings.*—(a) The vehicle shall have a brass plate rivetted in a prominent position on it to receive the Inspector's stamps. The brass plate shall bear the following particulars; title of Weights and Measures Act, name of owner of vehicle, vehicle registration number, and the serial number and capacity of each compartment. Space should be provided on the plate for the Inspector's stamps. Fig. 1 shows a simple design for a plate.

(b) The capacity of the compartment shall be indelibly marked on the manhole cover of the compartment and also painted on each side of the compartment so that it is clearly visible. If there are more than one compartments, then each compartment shall have its capacity marked separately as above and the compartments numbered serially. The number of the compartment shall also be marked on the discharge valve pertaining to the compartment.

(c) The vehicle registration number as well as the capacity of the compartment shall be indelibly marked on the dip/ullage stick at the top end. If there is more than one compartment, the different faces of one dip stick may be used for marking and each face shall bear the vehicle number, the serial number of the compartment, the proof and dip lines of that compartment and the capacity of the compartment.

The Rajasthan Weights and Measures (Enforcement) Act, 1958, as extended to the Union territory of Himachal Pradesh.

Name of the Company.....

Vehicle Tank No.....

| Compartment number | Compartment capacity in litres | Space for Inspector's Stamp | | |
|-----------------------|-----------------------------------|-----------------------------|--|--|
| | | | | |

Fig. 1 Name Plate

SCHEDULE XII (AS RENUMBERED)

FEES PAYABLE FOR VERIFYING AND STAMPING COMMERCIAL WEIGHTS AND MEASURES AND WEIGHING AND MEASURING INSTRUMENTS USED IN TRANSACTIONS FOR TRADE OR COMMERCE

(1) The following shall be added in sub-para (d)—Iron and Steel Weights of para 1:

50 g.....15 P.

(2) The figures and words '50 g' occurring in item 4 shall be substituted by the figures and words '500 g'.

(3) The words 'Metric tonnes' wherever these occur in items 4 and 5 shall be substituted by the word 'tonne'.

(4) The following shall be added as item 7, after item 6:

7. *Measuring Instruments (Linear):*

(a) Exceeding 1,000 metre Rs. 5.00 for the first 1,000 m plus Re. 1.00 for each additional 100 metre or part thereof subject to a maximum of Rs. 30.00.

(b) Exceeding 500 metre and not exceeding 1,000 metre. Rs. 5.00

(c) Exceeding 100 metre and not exceeding 500 metre. Rs. 3.00

(d) Not exceeding 100 metre Rs. 2.00

(5) The following shall be added at the end of item 2 (Liquid Capacity Measures):

Special measures (18.5 l) for petroleum products. Re. 1.00

Special glass beaker measures (300 ml) for the liquor trade. Re. 0.25

Peg measures (60 ml) and (30 ml) for liquor trade. Re. 0.25"

By order,
B. S. SINGH,
Secretary.